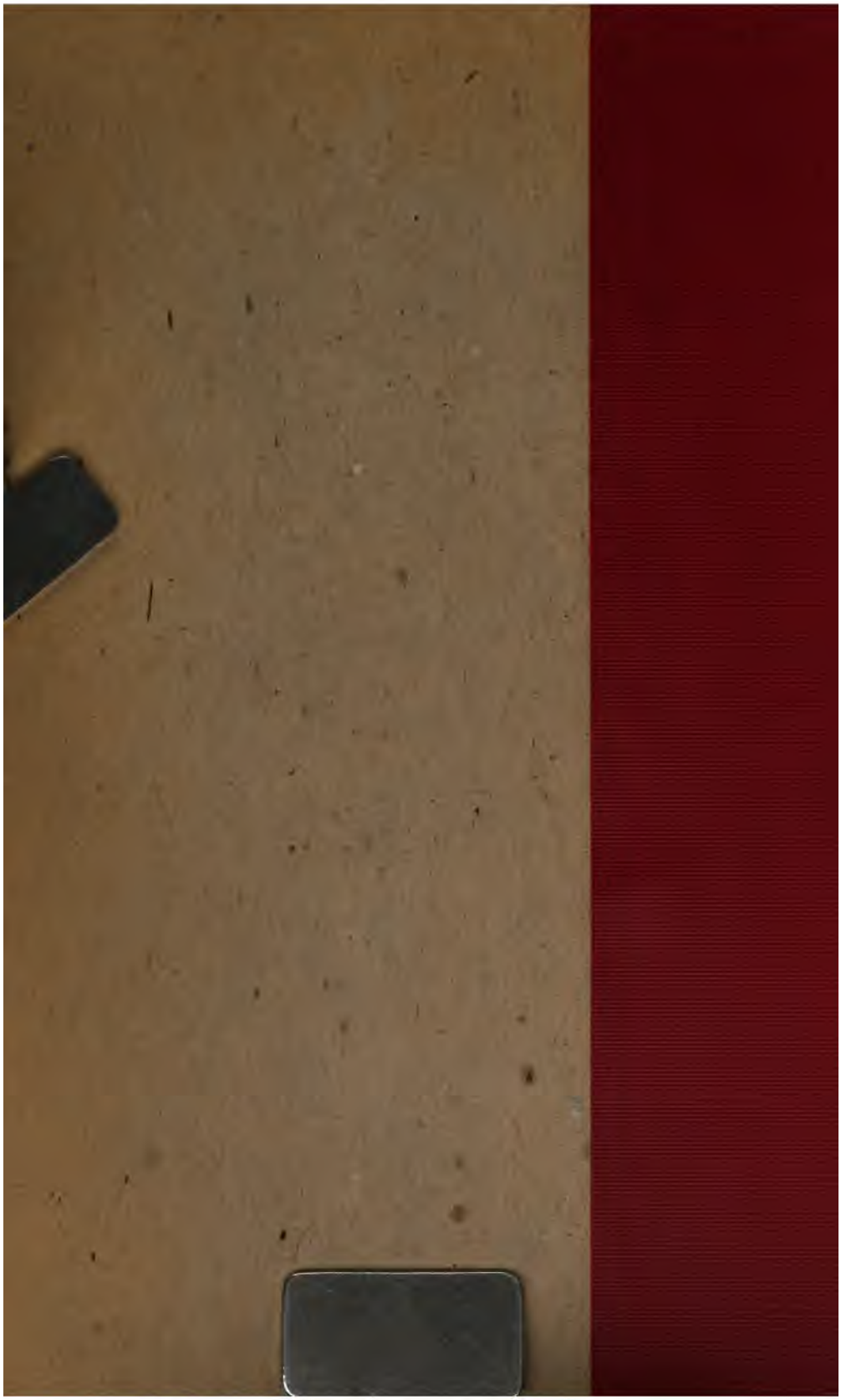

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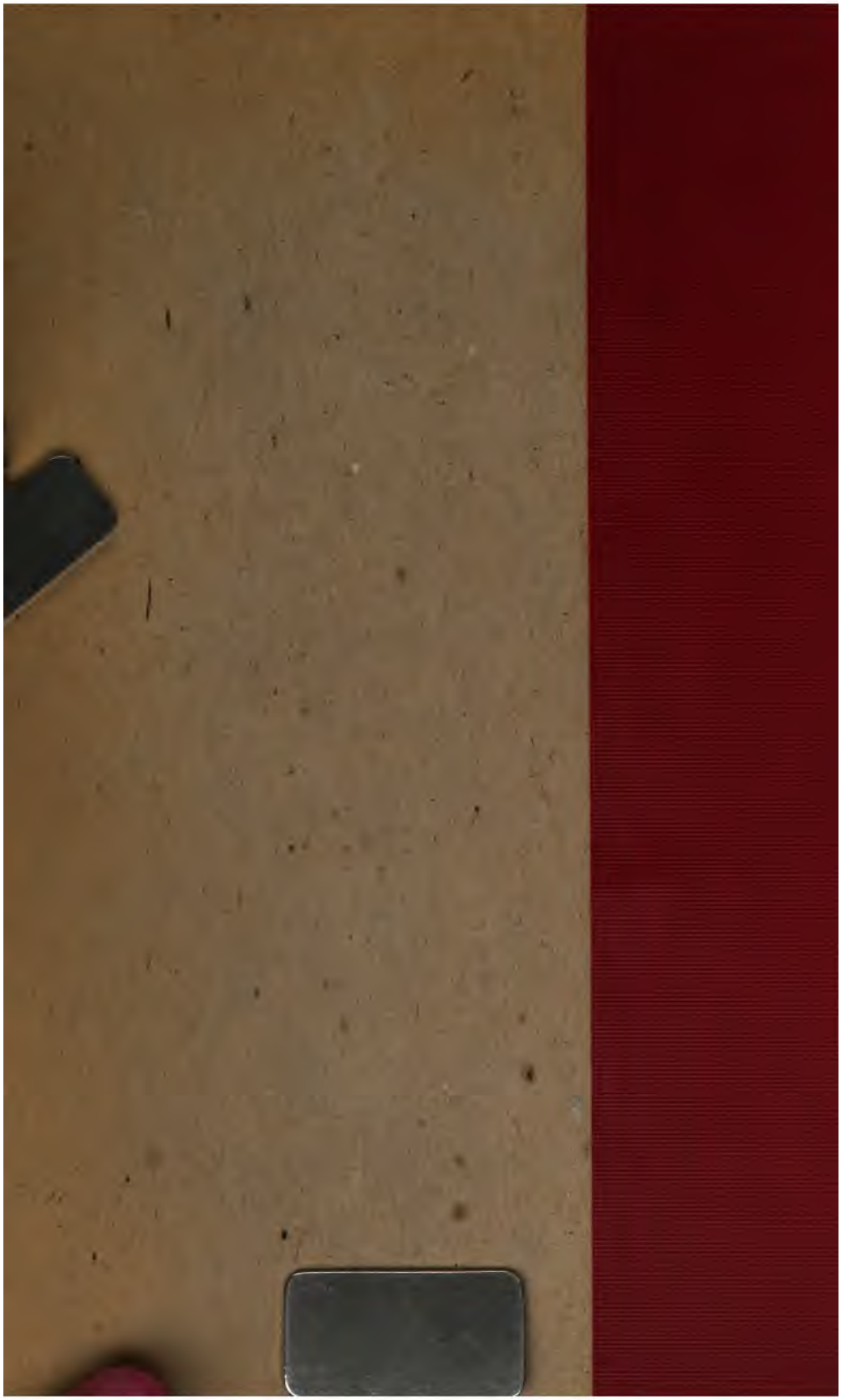

THE NIAGARA FALLS HIGH SCHOOL

A model building of its type when erected in 1903. The new building program for the city includes a large addition for the technical and industrial activities, auditorium, gymnasium, and swimming pool.

New York (State) University

A REPORT OF THE SURVEY OF THE NIAGARA FALLS SCHOOL SYSTEM

BY THE

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REPORT OF THE SURVEY OF THE NIAGARA FALLS SCHOOL SYSTEM

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INTRODUCTION

The study of the Niagara Falls school system was undertaken by the State Department of Education on the request of the Niagara Falls board of education, and with the cordial cooperation of the various civic organizations of the community.

In April 1919 a special report was presented to the board of education by their building and grounds committee calling attention to "the pressing need of additional housing facilities for the continually increasing school population." The report emphasized the fact that this need had been recognized for some time; that the president of the board had stated a year previously that "for 10 years up to that time the average increase in our population of school age had been approximately 400 pupils." The committee not only made an analysis of the attendance during the years immediately preceding, but endeavored to interpret the figures in terms of the school problem.

As an illustration of the careful thought given to the problem by the committee of the board of education we note their discussion of the school registration in relation to the situation in the higher grades: "Theoretically these (total elementary registration) could be divided into eight parts or 862 pupils in each of eight grades. But we have only a little over half that number in the seventh and only a small fraction over a third in the eighth grade, a dropping off of 32 per cent between the seventh and eighth grades. Of course there will be a gradual lessening of numbers in the more advanced grades but seemingly the proportion is too great."

The spirit shown by the board of education and their constructive approach to the whole problem not only in their own preliminary study but also in their cooperation with local and state authorities have been most commendable.

On account of their special interest in the building problem a tentative report was made by the State Department of Education to the local board of education early in the fall of 1919 covering the condition of the school plant, the probable direction in which expansion should be made, and comparative school costs in cities the size of Niagara Falls. This tentative report with some slight modifications forms chapters 11 and 12 of this more complete study. The larger part of the work covered by the survey was done during the school year 1919–20, with the exception that the measurement of the instruction and the giving of the standard tests was completed during the fall of 1920. There was unusual cooperation on the part of the superintendents, principals and teaching staff in every phase of the work.

By way of summary statement a few features of the report may be noted. Niagara Falls is a typically cosmopolitan city. Although it has a high percentage of foreign-born whites, this element is largely homogeneous and does not present the social problem found in many communities.

The board of education consists of nine members who are appointed by the mayor of the city. The financial control of the school budget rests largely with the board of education. The annual budget is prepared by the board of education and presented to the city commissioners for approval. Expenditures for school purposes are made under the direct control and supervision of the board of education. The business procedure and office routine in connection with financial matters is unusually well organized. The details are efficiently demonstrated. Apparently the board of education and the superintendent of schools appreciate that efficient business procedure is essential to sound school administration.

The teaching staff shows a high percentage of professionally trained teachers. The local school authorities require the completion of an approved two-year professional course for those entering the service in the elementary schools and graduation from an approved four-year college course for those entering service in the high school. The local school authorities have emphasized the importance of a professionally trained teaching staff through the marked increments that have recently been made in the salary schedules for both the elementary and secondary teachers.

The elementary course of instruction includes not only so-called common branches but also some special subjects such as music, drawing, industrial arts and physical training. The special subjects are under the direction of the special teachers. The work through-

out the grades varied somewhat from recognized standards on account of the reorganization in the course of study and in the supervisory program which had been only partially developed. The apparent outstanding need relates to the reorganization of the work in the higher grades which is already under way through the inauguration of the new intermediate school program.

There are six general courses of instruction in the high school, including college entrance, scientific, normal or teacher training, household arts, industrial and manual arts, and commercial. The courses in household arts and manual arts enrolled a relatively small proportion of the student body. The work in these activities has been handicapped, however, by the lack of needed space and equipment. In several departments the work would be strengthened by a more definite organization. The congestion due to the large high school enrolment and the limited space without adequate opportunities for special activities or for adequate work in physical education, undoubtedly accounts in large part for the loose organization found in the high school at the time this study was made.

The percentage of retardation in Niagara Falls schools is neither unusually high nor unusually low. A marked feature of the situation, however, is to be noted in that an unusually large percentage of boys and girls leave school as soon as they are beyond the provisions of the compulsory attendance law. This situation is appreciated by the local school authorities. This condition will best be met by the provisions that are already under way for the inauguration of the intermediate school program.

The study of the school plant indicates that the school population has rapidly outgrown the present school facilities. This is the outstanding feature of the problem. The rapid growth of the city and the corresponding increase in the school registration from year to year gives ample evidence as to the wisdom of the school authorities and civic organizations in making a thorough study of the present situation.

The elementary school buildings as a group are reasonably modern. The board of education has shown a wise policy in giving very considerable attention to the need of adequate playground space. Their vision is also evidenced in the large provision which is being made to meet this need in the new plans now under way.

Two of the buildings, however, — the Cleveland Street School and Fifth Street School — have probably outlived their period of greatest usefulness. These two buildings, while the oldest in the city, have been used to accommodate the large proportion of the children of the

seventh and eighth grades. This lack of adequate school facilities for the children of the early adolescent period was an outstanding weakness of the present local school organization. The probable annual increase in the school registration is from 400 to 480. If merely desk space were provided and if the present school buildings were sufficient, this means a new 24-room school building every two years. This would leave out of consideration, however, the present serious handicap under which the seventh and eighth grade pupils are working in the two oldest buildings of the city. It would also fail to consider the conditions in the high school where there is already need for additional space and more modern equipment to meet the demands for technical and industrial work.

As a result of the preliminary report and the recommendations regarding the intermediate school program, the board of education presented a plan providing for the building of two intermediate or junior high schools extending the present elementary school plant and providing also for a large addition to the present high school for technical and industrial work along the lines of the cosmopolitan or comprehensive high school unit.

The city of Niagara Falls, through the active interest of civic groups and public-spirited citizens, carried by a large majority five separate proposals representing a total bond issue of $3,500,000 for the purpose of putting the new school program into effect. Seldom has a city of the State adopted such a constructive and far-reaching educational program. The community is to be commended for its appreciation of the present need and its vision of the great possibility of the future.

The State Department of Education is pleased to have had any small part in assisting the community in carrying forward the plans which have resulted in such progressive educational steps.

Geo. M. Wiley

Assistant Commissioner for Elementary Education

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THE COMMUNITY

Niagara Falls is a city of 50,760 population in the western part of New York on the Niagar river and about 25 miles north of Buffalo. It is known throughout the world on account of the falls, and is visited by thousands of tourists each year. The city is also an important and rapidly developing commercial and industrial center. It has increased approximately 150 per cent in population since 1900. Its population in 1900 was 19,457; in 1905, 26,560; in 1910, 30,445; in 1915, 42,257; and in 1920, 50,760. It is an important railroad center, being located on the New York Central, the Michigan Central, the Wabash, the Lehigh Valley, and the Grand Trunk railroads.

The city was incorporated in 1892, when the two separate villages, Niagara Falls and Suspension Bridge, were consolidated to form the new city. Since the development of power was begun by means of the river, the industrial and commercial growth has been very rapid. Electricity, generated in huge plants, is transmitted over a wide area in western New York, being used east as far as Syracuse. The electro-chemical industries are doubtless the outstanding features of the manufacturing interests. Calcium carbide and carborundum are manufactured in large quantities. Among the other products are chemicals, machinery, foundry products, paper, flour, shredded wheat biscuit, and wood products.

The need of adequate educational opportunities in the school system of such a rapidly growing and industrially important community is self-evident. There must be a vital relationship between the school program and the fundamental arts and activities of a community, if the school is to function as it should in the lives of those in training. The school authorities and the civic organizations of Niagara Falls are not unmindful of this relationship and interdependence. This study of the city school system has been made on the request, and with the full cooperation, of the local authorities.

The population of Niagara Falls, according to the census of 1910, was typically cosmopolitan. The native whites of native parentage were 25.4 per cent of the total population. The native whites of foreign or mixed parentage constituted 34.1 per cent of the population. The foreign-born whites were 39.6 per cent and the negroes .9 per cent. It is apparent that the percentage of native whites of

native parentage is unusually low, this percentage for the entire State being 35.4. It is much less than in Utica, Schenectady, Amsterdam, Elmira or Binghamton where similar studies as to school conditions have been made. At the same time the percentage of foreign-born whites is unusually large, this percentage for the State being 29.9 while for Niagara Falls it is 39.6.

TABLE 1

	Niagara Falls	*Amsterdam*	*Utica*	*Schenectady*	*Binghamton*	*Elmira*	*New York State*
Native white, native parentage	25.4	33.7	34.8	43.3	62.9	58.4	35.4
Native white, foreign or mixed parentage.	34.1	31.9	36.1	30.7	20.5	26.	33.
Foreign-born white ..	39.6	34.	28.6	25.6	15.3	14.1	29.9
Negro	.9	.4	.5	.4	1.3	1.4	1.5

Although Niagara Falls has the largest percentage of foreign-born whites of any city of the group, an analysis of this shows that approximately one-half of this group is composed of Canadians, English, Irish or Scotch. The Canadians alone represent one-third of the foreign-born whites in Niagara Falls. In a sense therefore the group is homogeneous and does not present a serious foreign problem such as is found for instance in Amsterdam or in Utica. It is very true that there are large groups of non-English-speaking foreigners. There are groups of Russians, Poles and Italians that present large problems in the educational program and in the civic life of the community.

At the moment the analysis of the census figures for 1920 are not available. We have therefore presented the analysis of the population groups in Niagara Falls and in several other cities for purposes of comparison, using the census tables of 1910. It is quite probable that the percentage composition of the population of the various communities has not been changed in any wide degree during the past decade.

The diverse character of the population and the unique industrial and commercial activities present large but interesting problems to those responsible for the educational program of the city school system. At the same time the casual observer may note and the financial reports of the government show that Niagara Falls is a prosperous community with a per capita valuation of real property considerably above the average for cities of the same size. The interest of all groups of citizens in the continued development of better educational opportunities insures not only a better citizenship but also continued industrial and commercial growth.

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ORGANIZATION

The board of education of Niagara Falls consists of nine members, three of whom are appointed annually by the mayor of the city. The term of service which was formerly three, is now five years, since the new cities law became effective in 1917.

The functions of the board of education are defined by chapter 786 of the Laws of 1917, which became article 33-A of the Education Law and states that "the board of education is a corporate body and a majority of the board is a quorum for doing business." It has the power to perform the usual duties imposed on boards of education which are enumerated in the statute referred to as follows: "the power to create or abolish such positions as may be necessary; to appoint a superintendent of schools, principals, teachers or other employees; to have the care and control of all school property; to purchase apparatus, equipment or other necessary supplies; to establish and maintain schools, libraries, playgrounds, social centers or reading rooms; to authorize courses of study; to determine the textbooks to be used; and to prescribe necessary regulations and by-laws." The organization of the board recognizes the principles laid down in the statute.

Although chapter 300 of the Laws of 1904, which related to the "union district of the city of Niagara Falls" was repealed by the uniform cities act of 1917, certain provisions were continued, those having to do (1) with the appointment of members of the board of education, and (2) with the raising and expenditure of funds for the support of the public schools. Reference has already been made to the manner in which appointments are made to the board of education.

On or before the first day of April of each year the board of education is required to prepare a statement of the funds necessary for the school year beginning August 1st following. This budget is presented to the city council consisting of five commissioners, and if approved by a majority, is filed with the city clerk and becomes the school budget for the ensuing year. The city council may hold the budget as submitted by the board of education for 20 days. If the city council disapproves any item in the budget, it is returned to the board of education, which may revise the budget or pass it over

the council's objection by the approval of three-fourths of the membership. If at the end of this period it has been neither approved nor rejected, it is considered approved and filed with the city clerk. The city council is required under the statute to include the estimates in the city tax and assessment roll. These amounts are collected by the city treasurer as one of the divisions of the city budget. They are credited to the board of education and paid out only on orders signed by the clerk and the president of the board, and charged to the funds designated in the budget estimates as prepared by the board of education.

The expenditure of funds during the fiscal year for purposes connected with the public school organization is entirely within the discretion of the board of education.

If it is found necessary to purchase a school site or an addition to a school site, to erect a new school building, the board of education is required to call a special election of qualified voters of the district for this purpose. If such an election for raising funds for the erection of school buildings or purchasing school sites is not held in connection with the tax election called by the city council, the board of education may designate the polling places for the election for this purpose in the same manner as other tax elections are held. If the proposal for the erection of a school building is approved by a majority of the electors, the board of education has the authority to authorize the issuance of bonds or certificates of indebtedness in the form and payable at such time as it may be prescribed for the sum authorized.

It may be observed that the manner of raising and distributing school funds was not changed for the city of Niagara Falls by chapter 786 of the Laws of 1917, which amended the general education law in its relation to the cities of the State. Under the statutory provisions, the board of education of Niagara Falls is in large part free from the control of other city departments in financial matters. The city council, as has already been noted, passes upon the budget estimates of the board of education. To a large degree, however, the school authorities are free in the financial management of the schools, as expenditures are made under their direct control and supervision. This policy agrees with the best thought governing sound administrative procedure in school matters. It is occasionally found that the control of school budgets by local municipal authorities has prevented the carrying forward of a progressive educational program. In order that the schools may be conducted in a manner to meet the educational needs of the community, control in financial

as well as educational matters must be in the hands of school authorities. It is impossible to diverse financial and educational control. Without financial control there can be no educational control. In educational as well as in other activities the control of the funds carries with it the control of policy. The best school organizations in the country are governed by a board of education having full responsibility not only in educational but also in financial matters. While in Niagara Falls there is a review of estimates by the city council, the control of financial matters is in large measure in the hands of the school authorities. The conditions in this respect are far more satisfactory than in many municipalities. This doubtless explains in part the progress which has been made in Niagara Falls in insuring a progressive educational program for the city.

Board of Education

The membership of the board of education has been reasonably continuous. During the past nine years, as the records show, there have been only 22 different members on the board. The average term of service of these 22 members has been 3¾ years. With a membership of nine and a term of service of 3 years, this indicates a permanency of tenure that is commendable. Of the members of the board in office in December 1919, two had served during the entire 9-year period or longer, one had served 6 years, one 5 years, two 4 years, one 3 years; and two, 2 years. The average term of service of these members has been 5 years. Such continued service is helpful and even essential in working out a constructive program, and at the same time there has been the advantage of new interests and points of view through the contact of new members. At no time during this period has the organization of the board been suddenly changed through any large number of resignations resulting in new appointments.

The regular meetings of the board are held on the first Friday of each month. It is to be expected that adjourned and special meetings will increase the number of sessions necessary during the year. During the years from 1911 to 1919 inclusive the number of board meetings during each year varied from 16 to 26, the average number of meetings being 19. The number of sessions each year were as follows:

1910 — 18 meetings
1911 — 18 meetings
1912 — 21 meetings
1913 — 19 meetings
1914 — 17 meetings
1915 — 16 meetings
1916 — 21 meetings
1917 — 22 meetings
1918 — 26 meetings
1919 — 9 meetings to May 23d

The official proceedings of the board of education for the past 10 years have been read with care. It is apparent that the time and attention of the board have been directed constantly to the larger matter of school policy and the development of the school plant. As an illustration of this point of view on the part of education may be noted the action taken in April 1910 in appointing a committee to investigate the need of additional grounds around the school buildings, and what should be done in regard to rebuilding the Fifth Street, Cleveland Avenue, and Whitney Avenue schools, or any of the schools. This item early in the first year's minutes read is characteristic of the vision which the board has maintained during the past decade with regard to the necessity of ample school grounds and an adequate school plant. Many illustrations could be given of this attention to playground space. On the offer of property owners, space back of the Twenty-second Street school was rented for two years and then purchased as a permanent playground. The board investigated the purchase of property adjacent to the Thirteenth Street school, which was later acquired. Again the board considered the advisability of playgrounds at the Third Street school, which were opened shortly after. The city authorities cooperated with the school board in endeavoring to secure a public school athletic field but the plan did not work out successfully. The frequent repetition of items of this character with reference to the various buildings indicates the large interest which the board has given to adequate school sites and playground space. During this decade not only were former sites enlarged, but new sites were purchased and several buildings erected. There has apparently been an educational consciousness on the part of the people of the community, as frequently petitions have been presented relative to progressive school policies, and the public has consistently supported the board of education when tax levies are voted for school sites or new buildings.

The progressive attitude of the board of education and of various civic organizations has been evidenced through the steps that were taken to acquire the land adjacent to the high school. In this way a larger center has been established which gives a rather unusual setting to the high school grounds. The action of the board in requesting the city authorities to purchase this property indicates the foresight that has been used in endeavoring to secure ample playgrounds or to enlarge the free space which was of limited areas.

The board of education gives official recognition to the school athletic association. Many boards of education might do well to follow a similar policy. An athletic council under the direction of the board

TWENTY-SECOND STREET SCHOOL

Kindergarten and first seven grades

TWENTY-FOURTH STREET SCHOOL

A new elementary school, with modern equipment and with ample playground

has been established. This is treated at length under the discussion of the school activities.

The following summary of various activities on the part of the board of education during the past few years as noted from the minutes of the board, indicates the progressive spirit that has marked the development of the school organization.

Early consideration was given to the departmentalizing of the work in the higher grammar grades; to the extension of the manual training course in the high school to include forge work; to evening schools; to the curriculum and compensation of teachers. Millinery classes were established in connection with domestic science course; " special help " rooms were organized in certain grade schools; dental inspection was introduced into city schools in December 1912; vacation schools were discussed in 1913 and later established; a medical inspector of schools was appointed in 1913; room was granted to Italians for night school; a high school librarian was appointed in 1915; in 1917 the positions of city health officer and medical inspector of schools were consolidated. The board has also considered possible methods of relieving congestion, such as the Gary plan, lengthening the term for school; offering courses for foreign-born; petition from Italians for help; discontinuance of school fraternities. The real estate board appeared before the board of education to approve an extensive building plan to increase the number of schools. A preliminary study of the situation was made and the board asked for a survey by the State Department of Education.

The city is most fortunate in the high type of representative that has been found on the board of education, including in its membership the leading men in the professional, commercial and industrial activities of the community.

The board of education is not only a representative body but works in close cooperation with the various civic organizations of the city. It is essential in any community activity that the representative boards keep closely in touch with the public. In this way the board more correctly interprets the thought of the community, and the community in turn is constantly being educated as to the needs of the situation. This seems to be the kind of cooperation between the board of education and the public that is observed in Niagara Falls. The board of education is actively endeavoring to acquaint the people with the needs of the schools and with the larger educational demands of the day. In turn, the chamber of commerce and other civic organizations are giving the best cooperation. The results of this work are in evidence through the larger school program now under way.

The Superintendent of Schools

The superintendent of schools is the executive head of the school system under the direction of the board of education. The provisions of the statute[1] relative to the function of the superintendent of schools state that "the superintendent of schools is the chief executive officer of the board and the educational system." It is his duty to prepare the content of each course of study; to recommend textbooks to be used; to supervise all supervisors, principals, teachers, attendance officers, janitors and other persons employed in the management of the schools; and to exercise general supervision over all educational activities and interests under the direction and control of the board of education. Under this act teachers and other members of the teaching staff are appointed by the board of education upon the recommendation of the superintendent of schools.

The superintendent of schools is very properly given full authority by the board of education for the executive and administrative functions of the position. He is the executive representative of the board of education. This is true in fact as well as in name. Business matters as well as instructional matters come under his supervision. There is no differentiation between the educational and financial delegation of authority. Both of these function through the superintendent of schools. The two can not be divorced. Sound administration requires that the financial policy be based on the educational needs. Niagara Falls is fortunate in that this fundamental theory is thoroughly recognized.

In business matters the detail is handled by the clerk, but no steps are taken without the approval of the superintendent. In all matters of administration, educational as well as financial, the superintendent is the executive representative of the board and these functions are exercised with tireless energy. As the city and the educational system grow, more of the detail must be delegated to competent assistants.

The Clerk of the Board

The clerk of the board of education acts in a double capacity. He is the secretary of the board of education and also the executive clerk under the direction of the superintendent in charge of the financial and business affairs of the board. The by-laws of the board state that it is the duty of the clerk to notify the members of all meetings through personal notice or by mail. The clerk calls special meetings on the written request of any three members. The clerk is required

[1] Chapter 786, Laws of 1917.

to attend all meetings of the board and to keep a record of the proceedings. He is required to file in the office of the board " all reports, resolutions, bids of contractors, contracts, accounts, vouchers and other papers and documents."

The clerk functions in a somewhat larger sense than is indicated by the statement of duties in the by-laws. He assists the superintendent in looking after the condition of buildings and grounds. In a school system of this size, the clerk may very properly carry some of these duties and assist the superintendent in the details of administration. It would be wise to modify slightly the rules of the board to indicate more clearly the functions of the clerk as an assistant to the superintendent in connection with business matters.

Committees of the Board

There are eight standing committees of the board of education. The committees, each consisting of three members, are: finance, teachers, buildings, grounds and janitors, supplies, course of study and manual training, libraries, rules, regulations and printing, and high school.

Of the committees mentioned, the finance committee is in some respects the most important. It has supervision of the financial accounts. The finance committee is also responsible for the estimates of the amounts to be appropriated which are submitted to the board in preparation of the annual budget which is adopted by the board and forwarded to the city board of estimate and apportionment. This committee has a distinct function for the larger matters of audit, budget estimates and general oversight of matters of finance. The details of purchasing, however, and the responsibility for the handling of the routine of matters of finance should be delegated to the administrative representatives of the board. In fact, the board of education recognizes this principle in its procedure and has properly placed such responsibility on its executive representatives.

The formal rules of the board state that " it shall be the duty of the finance committee to examine all accounts and demands against the board, particularly as to the authority for and the correctness of the same and report thereon at each regular meeting and at such other times as the board may direct; to have supervision of the financial accounts of the board and to require the same to be properly kept in good business form so as to enable each member to ascertain at once the condition of each fund; to determine the fund from which any account or demand shall be paid and report at each regular meeting all accounts and demands audited by it since the last

report, with a brief statement of the purposes for which expenditure is made."

This indicates the wise check which is made on the handling of all school funds. It very properly gives the finance committee wide authority and discretion as to the use of the school moneys.

At the same time, it might be expected from the literal observance of such a rule that the meetings of the board would be largely taken up with specific authorization for expenditures and with the approvals of petty accounts. This is not the case, however.

Books or general supplies provided for in the general budget, the purchase of which is authorized in the general list of books and supplies for the year, are ordered from time to time by the clerk of the board on the approval of the superintendent of schools without further action on the part of the board of education. This is one illustration showing the tendency on the part of the board to delegate authority to its executive representatives. It is further noted that the separate accounts to be paid at a regular meeting are audited by the clerk of the board, approved by the superintendent of schools, and submitted to the board in itemized form followed by the affidavit of the superintendent and clerk. Such a plan not only places responsibility directly on the administrative representative, but insures greater efficiency than where a committee of three board members act in a routine manner on matters with which they can not be closely in touch. There is the constant check of the board's action on the clerk and the superintendent. Moreover, any item involving an expenditure of over $50 is ordered only after bids are received and the board has approved. It is observed, therefore, that the routine matters relating to the purchase of petty supplies have been properly delegated to the administrative officers of the board. This illustrates in general the manner in which the committees function.

A teachers committee is required, under the rules, to pass upon the qualifications of applicants for positions and to recommend to the board teachers for employment. The rules provide properly that no teacher shall be appointed or promoted whose qualifications are not approved by the superintendent. The committee is also required on or before the first regular meeting of the board in May of each year to prepare and recommend a list of teachers with the salary of each for the ensuing year. This committee might very properly be discontinued. The responsibility for recommending teachers falls upon the superintendent of schools. This has been recognized for many years as sound educational administration. It is now recognized in this State by law. Salary schedules are also fixed in part by statute

and in part by the rules and regulations of the board. There is no reason, therefore, why a special committee of the board needs to consider these matters. The recommendations of the superintendent should go directly to the board and the board should act in the matter as a committee of the whole.

The building committee is responsible for the general supervision of temporary improvements and repairs to the school buildings which may be authorized by the board. This committee is required to report at each regular meeting, and at such other times as may be necessary, relative to its proceedings, the contracts entered into and the progress of work since the last meeting. The committee is also required to direct the preparation of plans and specifications and to have supervision over the construction of new buildings, additions or improvements. It is believed to be unwise to hold the members of the board of education in a rapidly growing city — who are representative men with large personal or professional interests — responsible for the details of repairs or other improvements to the school buildings. These are very properly duties which should be delegated to the representatives of the board. A superintendent of buildings, under the direction of the superintendent of schools, may well be given administrative responsibility in such matters. We are advised that a superintendent of buildings has recently been appointed who will attend to many of the details of this work under the direction of the superintendent of schools. With an efficient superintendent of buildings, questions of minor repairs to the school buildings should be delegated by the board to the superintendent of buildings who will act under the general direction of the superintendent of schools. Such a change in the administrative responsibility will relieve the board of the necessity of having a special committee for the purpose of attending to these matters. The superintendent of schools may report to the board from month to month the more important items of repair which have been given attention since the last meeting, and will ask at each meeting for the necessary authorization — which should be given by the board — to cover larger matters which need its consideration.

A special committee on grounds and janitors has had charge of the care and improvement of the school grounds. This is, in a sense, illustrative of the tendency to increase the number of subcommittees. It should not be inferred that this committee has not done a very definite piece of constructive work. The school grounds in Niagara Falls have had attention, and as will be noted in another chapter, the board has been active in enlarging the school grounds for play-

grounds and recreational purposes. At the same time, it is very unusual, even when a board of education has several subcommittees, to find such a further subdivision as is found here, that is, one committee on school buildings and the other on grounds and janitors. It would almost appear as though the janitors belong more definitely under the building committee than under the committee having to do with the grounds. This should not be interpreted as any criticism on the activities of the committees, as they undoubtedly performed their functions well. At the same time, the important problem of providing adequate playground facilities and of seeing that the grounds about the school buildings have proper attention for landscape as well as for playground purposes may well be considered in general meeting except as the details in connection with the various problems are handled by the administrative officers of the board.

The superintendent should be relieved somewhat of the detailed attention which he has given to the janitorial staff. In this matter the superintendent has recognized the great importance of clean, well-kept buildings and the necessity of checking these conditions closely. In no other way can efficiency be insured. Janitors are required to report every week on the conditions of their building, and these reports come directly to the superintendent of schools. The effect of this supervision is apparent. Other superintendents might profit by this plan. As the school plant increases, however, which will doubtless be rapid on account of the growth in population, the superintendent will be unable to supervise personally all these phases of the work. The board has recognized this need and the new superintendent of buildings gives his entire time to the upkeep, repair and general conditions of the school plant. The new buildings now under way or in prospect will make such a position even more essential.

The purchasing of supplies is in the hands of the supply committee. The rules provide that the supply committee shall purchase and supply the schools with textbooks, fuel, furniture and various other articles required for use in the schools when authorized by the board.

As has already been stated, the purchasing of routine supplies other than those covered by the general estimates for the year and ordered at the beginning of the year are handled by the clerk under the general direction of the superintendent of schools. Items which represent an expenditure of less than $50 are ordered by the clerk of the board on the direction of the superintendent. Bids are received on items in excess of $50 and authorization for the purchase is made by the board.

The administrative procedure by which supplies are ordered is organized so efficiently that it is deserving of more than mere mention. Under the general direction of the superintendent of schools the following form is used by the clerk of the board of education in ordering supplies or other materials as they may be needed, whether the order has been authorized by the board of education or is of a routine character.

ORIGINAL

DEPARTMENT OF EDUCATION Order No. 4234
NIAGARA FALLS, N. Y.

Niagara Falls, N. Y.,.....

M.....

Address.....

Please enter our order for the following:

Ship Via.....Ship When.....

	Quantity	DESCRIPTION	Price

BOARD OF EDUCATION

.....Clerk

CONDITIONS

INVOICE must be rendered on inclosed form and properly executed. Accounts are settled on the first Friday of each month. Bills must be presented by the last business day of the month.

This order is issued in triplicate. The duplicate and triplicate are in the same form except that at the top of the duplicate are the words "duplicate — this copy must accompany invoice," and at the top of

the triplicate are the words "triplicate — this copy must be retained by shipper." The original is white, the duplicate yellow and the triplicate pink. There is, of course, a decided advantage in having the duplicate and the triplicate in different color from the original. Each copy is signed by the clerk of the board. With the order is inclosed a voucher form on which all bills to the board of education must be rendered. The voucher is in the usual form in which bills are prepared and at the bottom is space on which the shipper must make affidavit to the account as rendered.

On the back of the voucher must be entered by the clerk the name, order number, amount, fund and date audited. There is also space for the signature of the clerk, certifying that the account has been examined and audited, and also space for the signature of the superintendent indicating his approval of the bill. This illustrates the point already made that many of the details of purchasing supplies and auditing accounts have been properly delegated by the board of education and even by the finance committee to their executive representatives. Formerly the auditing of each bill was done by the committee. It was then necessary for the committee to examine and approve each bill as rendered. The detail of this procedure has been very properly placed upon the clerk, and the approval of the superintendent required. The clerk of the board, after having examined the list of bills to be presented at a given meeting (and these bills having received the approval of the superintendent), prepares a statement of the accounts payable.

The procedure which has been established by the board of education in order to provide the necessary machinery for properly checking the details of all business matters has many excellent features and in many respects might well be copied by boards of education where no such definite administrative procedure has been inaugurated.

The supply room is in the high school building in connection with the administrative office of the board of education. It is in general charge of the clerk of the board. There are two requisition forms used by the principals which differentiate between general supplies and books.

It will be observed that this form must be signed by the principal and approved by the superintendent before the requisition can be filled. There is the further check of receipt of the articles as one form of the blank must be detached and signed by the principal certifying to the effect that the articles had been received in good condition. The supply requisition is on a blue form; the book requisition on a yellow form. The use of such a requisition form necessi-

DEPARTMENT OF EDUCATION
NIAGARA FALLS
BOOK REQUISITION

.....191....

Please send to.....**School**

Fill in Both Parts of Blank

Am't Wanted	Do not use this column NO. SENT

.....

Principal

Approved.....

Sup't

Department of Education
Niagara Falls
Book Requisition

Date of Requisition.....191....

..... **School**

Do not use this column NO. SENT

Received the Above Articles in Good Condition

.....

Prin.

.....191....

DEPARTMENT OF EDUCATION
NIAGARA FALLS
SUPPLY REQUISITION

.....191....

Please send to.....**School**

Am't Wanted	Am't on Hand	Do Not Fill This

.....

Principal

Approved.....

Sup't

Fill in Both Parts of Blank, Separating School Supplies from Janitor's Supplies

Department of Education
Niagara Falls
Supply Requisition

Date of Requisition.....191....

..... **School**

Do Not Fill This

Received the Above Articles in Good Condition

.....

Principal

.....191....

tates a knowledge on the part of the principal as to the amount needed, based upon the needs of the school. It further gives the clerk a very definite check on the amount of any particular material that is being used in any given school. Too often there is no systematic procedure in handling the general supplies used in the schools. This can not be said of Niagara Falls. The forms in use provide an excellent blank for keeping a constant check on the general school supplies and furnish a permanent and continuing record of the needs of the various schools. The only suggestion offered in this connection is that probably as the school population increases and the responsibilities of the superintendent of schools become even greater than at present, several details of administration, such as the approval of the requisition forms mentioned above, will have to be delegated still further to the clerk, who may well be made responsible in such matters.

It is apparent from an examination of the printed rules and regulations of the board, which outline in detail the duties of the various standing committees, that in the administration of the school organization many of the duties nominally assigned to one or another committee have been in large part delegated to their executive representatives, the superintendent of schools and the clerk of the board. In other words, the board recognizes the modern tendency in educational administration, which has in large part eliminated the detail work of committee assignments through the placing of larger responsibility on the executive officers of the board. As the board functions in large part as a whole rather than through committees, serious consideration might well be given to the wisdom of doing away entirely with all committees. There is large responsibility on the board as a deliberative body, which must determine as the representatives of the city school district the educational policies to be carried out. These large matters are for the consideration, not of the members as individuals, not of committees, but of the board as a unit. This larger conception of the board of education as a legislative body has made more important their responsibility for general policies and the development of the school program over a period of years. Notwithstanding the number of committees provided for in the by-laws, the board of education of Niagara Falls is not bound by committee procedure as is true in many cities. Their important and proper functions are recognized and performed as a unit. This is well illustrated through the recent study which the board made looking toward the development of the school plant and the enlargement of the educational opportunities for the children of the city, in

connection with which chapters 11 and 12 of this report were prepared and submitted to the board in advance. The committee organization, which is largely nominal, could be eliminated without embarrassment.

Summary

The board of education of Niagara Falls consists of nine members who are appointed by the mayor of the city. The term of service is 5 years.

The annual budget is prepared by the board of education on or before the first day of April each year and presented to the city commissioners for approval. The board of education may pass any item over the objection of the city commissioners by the approval of three-fourths of its membership.

To a large degree the school authorities are free from municipal control in the financial management of the schools, as expenditures are made under their direct control and supervision. This policy agrees with the best thought governing sound administrative procedure in school matters. This doubtless explains in part the progress which has been made in Niagara Falls in insuring a progressive educational program for the city.

The city is fortunate in the high type of representative that has been found on the board of education, including in its membership the leading men in the professional, commercial and industrial activities of the community. The term of service of the members has been reasonably continuous. In all matters of administration, educational as well as financial, the superintendent is the executive representative of the board. Sound administration requires that the financial policy be based on the educational needs. Niagara Falls is fortunate in that this important theory is recognized. The clerk functions in a somewhat larger sense than the term would indicate. He is an assistant to the superintendent in connection with buildings and financial matters. His work is definitely organized and the rules of the board might well be modified slightly to indicate more clearly his functions.

There are eight standing committees of the board of education: finance, teachers, buildings, grounds and janitors, supplies, course of study and manual training, libraries, rules, regulations and printing, and high school.

In the administration of the school organization many of the duties nominally assigned to one committee or another have been in large part delegated to their executive representatives — the superintendent of schools and the clerk of the board. The board in practice there-

fore recognizes the modern tendency in educational administration which has in large part eliminated the detail work of committee assignments through the placing of larger responsibilities on the executive officers of the board.

As the board functions in large part as a whole rather than through committees, serious consideration might well be given to the wisdom of doing away entirely with all committees. Notwithstanding the number of committees provided for in the by-laws, the board of education of Niagara Falls is not bound by committee procedure as is true in many cities.

The business procedure and office routine in connection with the purchasing of supplies and the ordering of materials is unusually well organized. These details are very efficiently administered and the procedure might well be followed in other school organizations. Efficient business procedure is as essential in school administration as in other activities. It is too often given little or no attention. This work is effectively administered in Niagara Falls. The board of education is actively endeavoring to acquaint the people with the needs of the schools and with the larger educational demands of the day. In turn, the chamber of commerce and other civic organizations are giving the best of cooperation. The results of this work are in evidence through the larger school program now under way.

4

SUPERVISION

The program for supervision is one of the most important features of a city school system. In a rural school the teacher is in a sense not only teacher, but also principal and supervisor. In a village school the principal is the supervisor. In the larger unit, however, where there are thousands of children and hundreds of teachers, there must be thorough and efficient supervision, which requires specially trained persons to assist in directing the educational work of the schools.

The keynote of a successful school system lies in its supervision. The function of the supervisory staff in a system the size of Niagara Falls is to organize and to put into successful operation a clearly defined program of studies, closely articulating in every part from the lowest to the highest grades, with careful attention to the relative time balance in this program and with a carefully worked out scheme for the use of the material of instruction.

With such a general policy established, the technic of instruction, including the organization of classwork, the procedure from grade to grade, the consideration of individual interests, the correlation and the motivation of work as illustrated phases of supervision, lie in the hands of this supervisory staff under the immediate direction of the head of the school system.

It is gratifying to find in Niagara Falls the evidence of an intelligent and progressive scheme for the direction of the schools of the city. This supervision has concerned itself not only with the details of administration, the machinery for operating a school system, those elements of business administration which characterize a well-ordered office system, but in a notable degree there has been evidenced here a careful direction and guidance of actual instruction. The selection of teachers, the introduction into the curriculum of modern features, the proper time allotment for divisions of a subject, the study of the problem of program-making, the use of mimeographed outlines prepared by the superintendent and by his assistants for pupils both in study and in recitation, the personal consideration of pupils' progress and of promotions, are among the many indications that the superintendent knows personally the characteristics and the work of his teachers both in the grades and in the high school more intimately,

and directs their efforts more minutely when needed and more intelligently than is the case in many places. It is probable that with the continued growth of the city it will be impossible for him, or any superintendent, in the future to give the close personal attention to the details of instruction that he has given in the past. It will be necessary for him to carry forward his supervisory functions with respect to instruction more and more through associate supervisors. This is now being done in part through the various supervisors of instruction.

The present organization of the supervisory staff is as follows: a director of primary grades, a director of extension work, six supervisors of special subjects and thirteen special teachers working under the direction of these supervisors. It is natural that in a city with so many diversified industries and with the opportunities indicated for training in vocational subjects, the school system should reflect these special activities. This is evidenced in the relatively large number of supervisors and special teachers which Niagara Falls now has. These supervisors, together with their assistants — who are more largely concerned with actual teaching than with supervision — have developed in an admirable way this phase of the school work.

The work of the six supervisors is threefold in character. It includes (1) the organization of courses and of material of instruction, (2) observation of actual teaching, and (3) personal classroom instruction (model lessons).

The relative time distribution between these three phases of their work varies. One supervisor may find it necessary to give greater attention to the preparation of outlines or to group conferences, while another prefers to direct the teachers through the observation of model lessons.

Grades

There are in Niagara Falls thirteen[1] elementary school principals. Of the thirteen, two are college graduates (these two are also normal school graduates), three are normal school graduates, and the remaining eight are high school graduates.

Three of the principals have taken from one to three summer courses each, and three others have taken from one to four summer courses each at Chautauqua.

Six of the thirteen principals hold no higher certificate than a first grade, which is no longer issued but was granted on examination

[1] One other elementary school has been opened since data were secured.

without any professional requirement. Three of those holding these first grade certificates have had no professional training whatever. Two others have had no professional training except methods in training class.

The teaching experience of these principals ranges from 7 years to 36 years. The average number of years' experience of the group is 26 years. Ten of the thirteen principals have taught from 24 to 36 years, an average teaching experience of 29 years.

TABLE 2

Principal's experience

	Years in present position	*Other experience*	*Total years teaching experience*
Principal A.....	2	5	7
B.....	2	9	11
C.....	3	15	18
D.....	7	17	24
E.....	9	16	25
F.....	13	14	27
G.....	18	10	28
H.....	21	7	28
J.....	9	20	29
K.....	13	16	29
L.....	14	17	31
M.....	25	10	35
N.....	6	30	36
Average	10	15	25

The long-continued service of the elementary school principals is indicative of a permanency of tenure which should be conducive to professional growth.

Teaching is rapidly becoming a scientific profession. There is a science of teaching. To insure the use of this scientific material in the classroom there must be a leadership which is thoroughly familiar with the rapid development of professional thought during recent years. The leadership in each school is measured by the principal. Occasionally these positions are looked upon as the soft berths in the elementary school organization. Where this is true the entire school will suffer from the lack of progressive leadership. There are few positions which require more constant effort in keeping in touch with the development of educational thought than the principalship of an elementary school. Here and there in any organization will be found teachers thoroughly alive and keen to sense present needs and

to make use of modern methods. To make possible united effort of this character and to arouse the professional enthusiasm of every teacher there must be the inspiring leadership of the principal.

Many of the principals are doing excellent supervisory work, and a commendable spirit throughout the school system is marked. This is due we believe largely to the progressive spirit and active interest in every phase of the school work that is constantly shown by the superintendent of schools. More of this responsibility should be carried by the school principals. Principals should be doing original work in studying their peculiar school problems. Too often elementary school principals become narrow in their work and permit themselves to fall into a daily routine of duties, important it is true, but mechanical in character, which adds little to the life and growth of the school. Few school positions offer a wider field for constant study of live educational problems than the elementary school principalship. To make the most of such a position one must keep in close touch with the developments in modern educational thought.

The principals are responsible for the supervision of school units ranging from an enrolment of 138 pupils in the Maple Avenue school to 895 pupils in the Cleveland Avenue School. The enrolment and the average daily attendance in the elementary schools are given in the table for the purpose of noting the amount of detail work which must be done by the principal in these schools.

TABLE 3

Enrolment in elementary schools

School	*Enrolment*	*Average daily attendance*	*Number of teachers*
Cleveland Avenue	895	855	28
Fifth Street	816	760	24
Twenty-fourth Street	625	568	15
Thirteenth Street	580	532	14
Whitney Avenue	534	486	13
Twenty-second Street	523	446	13
Tenth Street	492	....	13
Ferry Avenue	472	431	12
Sugar Street	383	368	10
Ashland Avenue	362	331	11
Center Avenue	362	342	10
Third Street	220	203	6
Maple Avenue	138	125	4
Enrolment per teacher varies from 32 to 41			
Average attendance per teacher varies from 30 to 38			
High school	960	....	40
Enrolment per teacher in high school is 24			

A large elementary school is one of the most important institutions in any community. The product which it is constantly turning out is beyond value. Scientific methods should govern its organization and administration. This is quite as important as a superior teaching staff in the classroom.

In answer to an inquiry as to the number of hours a day given to classroom supervision and to office duties, it was found that the time given to supervision varies widely. If the statements given are correct, the principal of the smallest school gives the greatest number of hours daily to supervision. This may be quite true as the clerical and routine office tasks must necessarily be much lighter in the smaller school. The average number of hours a day given by the principals to supervision is 3, and an average of 2 hours daily is given to office duties. Undoubtedly additional time is given to school work which does not appear in this distribution.

The amount of clerical work which must be done by the elementary school principal is a serious problem. Some of this work may be useless and not worth doing. There are also additional special tasks and compilations which would be of great value and importance in measuring the progress of pupils which oftentimes are not done because of lack of time or of definite objectives. The clerical work to be done should be carefully evaluated and some plan worked out whereby some clerical assistance could be provided. In two large schools the kindergarten teacher gives some assistance. In all the other schools there is no clerical help. The high school principal has the full time of one clerk, and an assistant for a portion of the time.

If a principal is qualified professionally for his work his time is too valuable to be given to routine clerical work. A clerk at a clerk's salary should be assigned to the clerical duties. If the principal is qualified only for a clerical job, he should be given a clerk's salary, and one trained for educational work appointed as principal. A possible solution might be to adjust the clerical work in the principal's office in the different elementary schools so that two or three clerks, trained in the special duties, might be able to do the general clerical work for all the elementary school principals. This suggestion may not be the best. It would appear, however, that some clerical assistance is essential. This is especially true in the large schools. A principal of a large elementary school should be able to give the greater part of his time to the vital educational problems of his school and community.

Meetings and Conferences

An indication of the type of leadership in the principals is shown by the character and frequency of teachers' meetings. There is no standard procedure in this matter. One principal states that he has a teachers' meeting every Monday afternoon. The practice in the other schools varies. One principal states that he has sometimes three a month and again only one a month. Another states "about one in two months," etc.

There may be no relation between the lack of definite meetings of the teachers of the different buildings, under the direction of the principal, and the lack of professional growth on the part of the principals through summer session work. One is compelled, however, to note the two facts side by side. The conditions observed do not indicate a strong professional spirit on the part of the principals.

During the year a series of conferences has been held in which the reorganization of the elementary course of study and general methods of class procedure have been under consideration. These conferences have consisted of committees of teachers appointed by the superintendent for this special study. It is apparent that the work has been undertaken with enthusiasm and the various groups are accomplishing a very important work for the schools of the city. Further reference to the work of these groups and some features of their recommendation are given in the chapter on the course of study and instruction in the elementary grades.

The impression was gained that the teachers' meetings held by the principals are called for the most part for the purpose of informing teachers with regard to general instructions, such as those given out by the superintendent of schools, and for the discussion of other matters of a general character. A few principals state that in the teachers' meetings they discussed special matters pertaining to the structural work of the schools, that this follows and is based on the observation of the work in the schoolroom. It is to be noted, however, that only one principal states that a professional book or topics of a professional character were at times taken up for discussion at the teachers' conferences. It is significant to note here in brief that the teaching staff through conferences and group meetings takes an active part in organizing and planning, with the cooperation of the superintendent of schools, the instructional work of the schools.

Supervisor of Primary Grades

The work of the first, second and third grades is under the general direction of the primary supervisor, who endeavors to visit each teacher once each month, but more frequently when a teacher is new or in need of special assistance. The supervisor of primary grades is directly responsible for the work in reading, language, spelling and numbers. The other subjects are looked after by the supervisors of special subjects.

Group meetings of the primary teachers are held once each month, at which outlines are discussed and explained, type lessons are presented by the supervisor, modern methods are discussed, and individual teachers are invited to present methods and devices they have found helpful. Conferences with individual teachers are held in their buildings or in the office by appointment. Type lessons are also presented occasionally by the supervisor in the classroom. At least once during the year a type lesson is observed in each subject.

One of the plans now under way is the organization of committees in the different grade groups to plan problems to be worked out during the year. From time to time the teachers contribute games for drill which they have found helpful. These are typewritten and distributed among the teachers.

During the past two years stress has been laid on the subjects of reading and language, and the necessity of closely correlating the work in these two subjects. Excellent use is made of rhymes, stories and songs. Emphasis is placed on good articulation and pronunciation, as necessary to good reading, and careful attention is given to phonics.

Every effort is made toward motivation of the work. The habit of observation is trained from the first in such a way that the connection between the school and the home is felt. Silent reading is emphasized. As the work advances more time is spent on actual reading, the phonetic work being given in separate periods. Greater emphasis is placed on thought-getting and thought-giving. Supplementary books are used freely. Many school library books have recently been added to the equipment of the grade rooms so that the schools are now well equipped with supplementary reading material. Beginning with the third grade some books are sent from the public library.

The work in these primary grades is efficiently directed. Here is every evidence of thorough supervision. As an indication of the correlation of subjects it was observed that occasionally simple arithmetic problems are used to intensify the interest and test the accuracy

in reading. Reproduction and dramatization are in common use, and pictures gathered by the pupils are used for original stories and written work in these grades. Collections of pictures are also made for use in connection with the geography and history material used in the third grade.

It is worth while to emphasize the advantages of a close direction of the fundamental subjects in the elementary course of study through the work of the primary supervisor. It was observed by the specialists that the reading was less satisfactory in the intermediate grades than in the primary grades of the schools of Niagara Falls. The condition was not ascribed to a less satisfactory quality of teaching ability than that found in the primary grades, but it seems to be quite directly traceable to the lack of unified and competent leadership in the grammar grades which shall clearly define the aims of the teachers' work in these grades. This might be organized through the selection of a supervisor of grammar grades, who shall do for the grades under her control what has already been done by the director of primary grades.

Supervisor of Drawing

Through the first six grades drawing is taught by the grade teacher under the direct supervision of the drawing supervisor, who endeavors to observe the work in each of these classrooms at least once in two weeks. Some personal instruction is given to the grade teacher at each of these visits. Grade meetings are held by the drawing supervisor at irregular periods. Typed outlines of work are given to each teacher every two months. These take the place of a printed course of study, and make it possible to revise the material from time to time as the needs demand. This is far superior to the policy that is often followed of putting into printed form a course of study with fixed requirements from month to month and of holding rigidly to this fixed outline from year to year. In addition to the typed outlines given out by the supervisor, each teacher has desk copies of several of the best art textbooks available.

In the seventh and eighth grades the work is organized departmentally and taught by special drawing teachers under the direction of the supervisor of drawing. There are also special drawing rooms where this work is done.

The work is organized as a unit from the first grade through the eighth. The courses are well defined and cover the following subjects:[1]

[1] As given by the drawing supervisor.

a Color. Teaching color theories and harmonies and the methods of applying such knowledge to problems of daily life.

b Art appreciation. Acquainting the children with beautiful pictures and art objects and each year giving them some definite knowledge of a few of such pictures and objects.

c Commercial design. Including some knowledge of lettering, picture mounting, design proportions as related to book titles, signs, posters etc.

d Interior decoration. Endeavoring to give the child some idea of the use of color and form as related to the furnishing of a modest home.

e Costume design. Teaching the use of color, line and spacing as related to the costume.

f Constructive design. Teaching the use of the ruler in planning simple constructed objects of some practical use.

g Nature drawing. Teaching the child to see form and in some slight degree to reproduce it, for the purpose of application in design motifs or otherwise.

h Object drawing (for practically the same purposes). To teach the children to see form, to reproduce it in some slight degree and to use that ability and knowledge in the formation of original ideas in design and commercial advertising. This knowledge of object drawing is also used in correlation with other subjects, with story telling and language work in the lower grades, with geography and history in the upper grades.

An effort is made to correlate the work of the drawing department with all other phases of the school work, doing some project work in the intermediate grades which closely correlates the drawing, English and geography, and in the seventh and eighth grades and high school, correlating the design with the work of the domestic science and manual training departments.

Supervisor of Domestic Science

The courses in domestic science and art are sewing, which begins in the fourth grade, extending through the second year of high school, and cooking, which is offered in the seventh and eighth grades and in the first two years of high school.

The supervisor is a teacher in the high school; unfortunately, however, she has only one-half of a day each week for actual supervision. That half day is spent observing the work of the four other teachers in the department. The supervisor outlines the work to be done and holds a monthly meeting for discussion and outlining plans.

It is frequently a most excellent plan to organize the elementary and secondary work as a unit by putting the supervision of the entire field covering a given subject in charge of one person. We believe that the plan for the supervision of the homemaking courses is wise. It should result in a unity of effort which might not otherwise be secured. Unfortunately, however, the time allotted for the actual work of supervision is so limited that it would be unfair to hold the supervisor responsible for the detail of the program to be carried forward. Under such conditions the results must be measured in large part by the initiative of the regular teacher. This is not a reasonable organization for the supervision of such an important part of the educational program. As the work becomes reorganized in the higher grades in accordance with the intermediate school program this field will become of much larger importance and undoubtedly provision will be made for more complete supervision. Under the present program the supervisor has some teaching periods, but the new plan provides for full time for supervisory duties.

Supervisor of Penmanship

The supervisor of penmanship is responsible for the direction of the work in penmanship in all grades of the elementary schools of the city. The schedule of the supervisor provides for a two-week program during which time all schools are visited.

During the past year two series of meetings have been held. There have been meetings in each building for the teachers of that particular school. There has also been a series of grade meetings for the purpose of outlining the work and of giving special help to the teachers of each grade.

At the time of the biweekly visit, the lesson is sometimes conducted by the teacher and at other times by the supervisor. The supervisor aims at all times to give constructive criticism.

Written lessons in other subjects are often inspected for the supervisor believes that the writing lesson is of little value except as it is a preparation for all written work. The supervisor also endeavors to inspect the writing in other lessons at the time of preparation, but because of her crowded schedule it is not often possible.

Supervisor of Music

The supervision of music is limited to the elementary grades, the same as penmanship. The supervisor of music is responsible for the work in the elementary schools. An effort is made on the part of the supervisor to visit each grade teacher at least once in two

weeks. Where teachers are unusually strong she visits the class once in four weeks.

In connection with the class visit the supervisor frequently gives model lessons, and at other times observes the instruction as given by the teacher. Grade meetings are held occasionally. Special groups are called together, as for instance new teachers who may need special instruction. Individual conferences are also held frequently.

The following brief outline submitted by the supervisor indicates the general scope of the work.

First grade. The work is largely by imitation, ear training, matching tones and rote songs, simple songs and art songs.

Second grade. Ear training, rote songs, visualization, use of books in the last part of year.

Third grade. Study of signs of key and time, interval studies, rhythm studies, scale studies, songs.

Fourth grade. Third grade work continued, with more complicated forms and more definite drill.

Fifth grade. Additional problems of time and tone with study of chromatics added. Part singing introduced.

Sixth grade. Part singing in two and three parts with sight reading continued. Minor keys studied.

Seventh and eighth grades. A general review of key and time problems as found in the part music written for these grades. Chorus singing.

There are grade orchestras in the larger schools. These are under the general direction of the supervisor. Some excellent work of this character is done.

Supervisor of Physical Training

The physical training work is in charge of one supervisor and two assistants, two men and one woman, the assistants locally called directors. The work of the department is organized as follows:

The supervisor outlines and plans the policy and work of the whole department, personally supervising all the setting-up work in the eleven grade schools and high school and all the playground and athletic work in the grade schools. The two assistants, or directors, teach all the gymnasium classwork in the high school, conduct the high school athletics, and supervise the work in one grade school one half of a day each week under the supervision of the supervisor. All outlines of work in physical training and athletics are prepared by the supervisor and furnished to the directors and teachers.

The setting-up work is taught in the classroom by teachers who follow an outline furnished by the supervisor, who visits each teacher

once a month to observe the work and give instruction. The high school teachers are met in a general meeting once every two months where new outlines and instruction are given by the supervisor.

In the grade schools 40 minutes of setting-up exercises and 60 minutes of supervised play are required of all pupils. Outlines for setting-up exercises and games are furnished and taught by the supervisor who visits every grade once in two weeks, at which time he observes the old lesson and teaches the new. A new lesson, containing exercises, games and athletics, is furnished every month. All setting-up exercises are taught in four two-minute periods.

The games are given in the classroom when the weather is too severe, and on the playground when the outdoor conditions permit.

There are at present eight playgrounds surfaced and partly equipped where all boys and girls are given supervised play and athletics.

In the high school all pupils are required to take one hour of gymnasium and 40 minutes of setting-up work in the classroom each week. The gymnasium work is taught in two classes a week of 40 minutes each by physical training directors in the gymnasiums.

The grade school athletics include a cross-country (paced) run of 2 miles for boys in the sixth, seventh and eighth grades that are physically fit. Representative school baseball teams are organized for sixth, seventh and eighth grade boys. A field day is held each year for grade school boys and girls from the sixth, seventh and eighth grades.

Industrial Arts

The work in industrial arts begins in the fourth year of the elementary course and continues through the high school. The director of industrial arts is also in charge of the vocational school and of the vocational work in the evening school.

This department has grown rapidly during the last 3 years. Three years ago there were three special teachers; there are now seven teachers on full time and two on part time. It is expected that several teachers will be added at the beginning of the next school year. At that time the director of the work will probably be given full time for supervision.

The supervisor endeavors to visit each department of work that is being carried on by a special teacher at least once each week. At that time the work is carefully inspected and constructive suggestions are made. Outlines of the work for the year are given to the teachers by the supervisor after these have been approved by the superintendent, and frequently conferences are held by the super-

HIGH SCHOOL GIRLS GYMNASIUM CLASS

HIGH SCHOOL BOYS PHYSICAL EDUCATION CLASS ON PLAYGROUND

visor at which all industrial and mechanical drawing teachers are present for a general discussion of problems. These outlines are very properly flexible rather than fixed and suggest to the teachers types of work to be done. Considerable latitude is left to the individual teacher to develop the work as his initiative and resourcefulness may suggest and as the needs of the individual pupil may require.

The work of the industrial arts department is begun in the fourth grade and continued through the high school. The work in the fourth and fifth grades was begun during the present year and consists of coping saw work in thin wood, the pupils making toys and small novelties. The work is both practical and instructive. The time given to this work in the fourth and fifth grades is 45 minutes each week. In some schools the work is done in the manual training shop; in other schools, rooms have been fitted up in the basement for this purpose.

In the sixth grade the work is confined to the making of small household articles, bird houses and problems of this type. In the seventh grade larger projects are undertaken such as bookracks, taborets, plant stands or other projects of this type which the boys may wish to undertake. The aim of all the industrial work in the seventh grade tends more to the development of initiative and the ability to grasp an idea and embody it in some practical, useful project rather than merely skill or technic, although these are not in any sense neglected.

The shop work in the eighth grade consists of individual projects in cabinet work and applied decoration, as cane weaving, copper work or upholstery. This work is used in the grades as the basis for much related work. So far the work in the grades has been confined to woodwork but plans are under way to present simple problems in both the seventh and eighth grades in sheet metal, copper work, concrete and electricity in so far as the shop facilities will permit. The periods for shop work in the sixth, seventh and eighth grades are all one hour. The work is carried on in the shops or centers in the elementary schools.

The shop work in the high school has thus far been handicapped on account of the small amount of space available for the work. The work in the first year is planned to cover the fundamentals of carpentry and cabinet-making. The first half of the second year of high school is devoted to wood turning. Every effort is being made to tie up the various projects with some trade interest. The second half of the second year is given to elementary sheet metal work. This work functions well and is correlated with second year drawing.

The third year is devoted to larger work in sheet metal in which pails, pans, ash cans and similar work is undertaken. Many projects are worked out for the school department. Few boys register for shop work in their senior year. This is undoubtedly due in part to the lack of adequate equipment for the technical work of this type. Those who do elect the work usually have some special project which they wish to carry forward for themselves.

The vocational school is treated at greater length elsewhere. The vocational machine shop course was begun only during the present year. It is planned to instal additional courses in the vocational school another year, including advanced machine shop work and also a practical electrical course. At the present time elementary machine shop work is given and applied mathematics that functions with the daily shop work. Practical problems in algebra, geometry and trigonometry are given. The drawing work given is correlated and all the problems made in the shop are worked out in advance in the drawing room. The English work that is given articulates also with the subject matter of the other vocational courses.

Extension Work

The extension work as carried on in the city of Niagara Falls is somewhat unique in its development. In this work various related types of activities have been brought together and are being administered efficiently.

The field of supervision, under the director of extension work, includes Americanization in school, home and factory, evening schools, extension lectures, and other work of this general character. It is to be noted that these activities are a part of the educational program of the board of education under the supervision of the superintendent of schools, for which regular provision is made in the annual budget.

The peculiar character of the work and the duties that fall to the director of this work prevent any fixed weekly or other schedule of supervision.

Extension work in the city is conducted in homes, schools, factories and in other centers as conditions arise. The evening schools opened September 29, 1919, and closed March 30, 1920, being in session 68 days during this period. The Americanization classes began September 4, 1919, and closed April 27, 1920. Two classes continued later, one because of late organization and the other, the citizenship class, on account of June court. The school classes are held Monday, Tuesday and Thursday from 7.30 to 9.30 in the evening. The factory classes have been conducted as unit courses ac-

cording to factory conditions. The hours vary, some running 2½ hours, others 3¾ hours, some 4 hours a week in accordance with factory demands. The teachers in general are paid by the board of education. The home classes so far have been held for one hour a week, conducted by volunteer teachers. In this brief review of the supervision of work, mention can only be made of the general character of the work. The courses so far as possible are in accordance with community needs. The evening high school is the main center for the evening and extension work. Here were conducted, in addition to the citizenship class and the English classes, the work of special interest to women, including sewing, millinery, cookery, dietetics, Red Cross home nursing, and china painting. The dietetics class included all the pupil nurses of St Mary's Hospital. The home nursing was financed by the Red Cross.

Classes in Italian, Spanish and French were conducted. The business classes included stenography, typewriting and bookkeeping. On account of the unusual interest these were continued after the close of the general session. Business English, business arithmetic, and business writing were included. Algebra, geometry and trigonometry were in demand. There was a class in electrical theory and practice, a beginning and advanced class in mechanical drawing, one class in cabinet-making and three classes in chemistry.

The total registration in the extension work for the year exceeded 1800. There were 792 in the Americanization and citizenship classes, with 24 nationalities represented. One secret of the success of the extension work in Niagara Falls has undoubtedly been the recognition of the importance of keeping the work in close touch with community needs.

The Americanization work included 32 classes in English, of which 12 were in the evening schools, 8 in factories, and 12 in home classes. The home classes have been conducted largely by volunteer teachers. Although they were started late and interrupted by health conditions in the city, the beginnings have been most encouraging. A council of women, composed of representatives from the women's organizations of the city, as widely cosmopolitan as possible and including representatives of the so-called foreign societies, has been organized to consider the problems connected with the women's classes. Invitations for volunteer teachers to teach in the homes have been secured by the teachers of the public schools whose splendid work in Americanization can never be overestimated. Classes were conducted in seven factories (three more than the preceding year) with an enrolment of 154. The success was due in part to the splendid coopera-

tion of the factory authorities. In two instances, that of the National Electro-Chemical Company, as one class, and that of the National Carbon Company, as two classes, so successful did the management deem the work that when the school budget was exhausted the two factories placed the teachers on the factory payrolls in order to finish the courses. Such action indicates the splendid community spirit that has supported the evening schools and Americanization work. In the high school there has been community singing and social evenings for the Americanization classes with an unusual spirit of cooperation and enjoyment.

High School

The Niagara Falls High School occupies a plant beautifully located, reasonably modern, but inadequate for the large needs of secondary education in the rapidly growing industrial community which it serves. In this chapter it is not our purpose to enter into any discussion of the type of work or courses of study offered but merely to outline the organization and supervision through which the work of the school is administered.

Under the direction of the superintendent of schools the high school principal is responsible for the supervision and administration of the high school and activities. There is a vice principal, a woman, who also acts as a supervisor over all scholarship and attendance records, and as a supervisor of girls. There is also a clerk in the office who gives general assistance to the principal and vice principal.

There are no heads of departments as are usually found in a high school of this size. An advantage of the departmental organization, with a head in charge of each major line of work, is so generally conceded that a discussion of its merits seems unnecessary. The principal needs the assistance of department heads in following the classroom instruction and in directing the work of the classroom teachers toward definite and proper objectives. Such an organization is important and essential from the instructional point of view. It is equally vital as a factor in general school administration. The spirit and morale in any organization have much to do with the character of work done or with the product. The aims and ideals of the high school principal as to the function of the school best reach the high school body when reinforced by strong sympathetic department heads. Moreover the needs of the individual pupils, which are too often given little or no attention by the teaching staff, can be followed up and helpful advice insured only through department heads who are given this responsibility. In the Niagara Falls high school there is too great a gap between the school administration and the individual

members of the student body. A departmental organization, or something similar, would oftentimes simplify administrative problems from the standpoint of the school executive; it would also enable the school to meet far better the needs of the individual pupils in the classroom. The principal states that in some cases he recognizes seniority or ability in considering some one as chairman of a department. This can not meet the situation. It is believed that the high school administration would be greatly strengthened through formal designation of departmental headships.

The high school committee of the board of education may grant the use of the assembly room and lecture room for such purposes as seem beneficial to the educational and moral interests of the community, to which admission may be charged. All sums received from such use of these rooms and from the tuition of nonresident pupils are placed in the school decoration fund and used in the purchase of pictures, statues, busts, physical and other apparatus as authorized by the board.

The high school literary and athletic activities seem to be subject to the special supervision of the high school committee of the board. The rules of the board place the general control of such associations under the general supervisory control of this committee. There would seem to be no reason why the board should assume any responsibility for such administrative direction. A committee has not the time to give to such matters, neither would any individual member attempt to perform such duties that belong without question to the principal of the high school, subject to the general control of the superintendent of schools. The board may well make regulations governing these as well as other school activities; supervision and administration, however, should be left with their executive representatives.

With the reorganization of the educational program for the higher grades now under way and the introduction of the intermediate or junior high school plan there will be brought about a much closer articulation between the upper grades and the high school than now obtains. The present high school courses do not reflect as one would expect the industrial interests of the city. These larger technical needs are appreciated, however, by the members of the board and superintendent. With this larger program for the secondary work clearly in mind, the development of a broader plan for administrative and supervisory control in the high school becomes imperative.

Summary

The supervisory staff under the direction of the superintendent includes a director of primary grades, a director of extension work, six supervisors of special subjects and thirteen special teachers working under the direction of the supervisors. There is one high school principal and thirteen elementary school principals.

There is strong supervisory control through the office of the superintendent of schools. There is at the same time a cooperation of effort on the part of the teaching staff which is evident in all problems that arise in connection with the details of classroom work. The supervisory leadership is more marked on the part of the directors and special supervisors than on the part of the elementary school principals. In so far as professional growth is indicated by special work during summer sessions and in graduate schools, the elementary school principals have not carried on professional work to the extent that this has been done by the teaching staff.

The cooperation between the teaching staff and the supervisory force is observed in the work of several committees now under way having to do with the reorganization of the elementary course of instruction. Much of this work is being done by groups of teachers selected from the various schools and indicates a very helpful atmosphere throughout the school organization. It is significant to note that the teaching staff through conferences and group meetings takes an active part in organizing and planning, with the cooperation of the superintendent of schools, the instructional work of the classroom.

As is frequently observed in other cities, many of the elementary principals spend altogether too much time in routine clerical work. It may be due partially to failure to appreciate the large function of the school principal. It may be due again to lack of professional ability. Every effort should be made, however, to see that clerical work is reduced to the minimum and that work essentially clerical in character should be performed by clerks employed for the purpose.

There is evidence of unified direction of the fundamental subjects in the primary grades where the work is under the general direction of the primary supervisor. It is quite possible that a similar type of helpful and constructive supervision in the higher grades in addition to the general direction now given by the superintendent of schools would be a wise administrative procedure. It is to be noted further that the general problems in these grades will be closely articulated with the development of the intermediate school which is already under way and may be largely solved by this reorganization.

The flexible character of the treatment of the course of study by the supervisory staff is illustrated in the drawing work. Group meetings are held frequently by the drawing supervisor and typed outlines are given to the teachers at least every two months. This method makes it possible to revise the material from time to time and to modify the work as occasion demands. Every effort is also made to articulate the drawing work with related subjects in the course of study.

The supervisor of domestic science, as is true of several other supervisors, unfortunately, is compelled to spend a considerable portion of time in classroom teaching. The supervisor of domestic science spends one-half of a day of each week in actual supervision; the remainder of the time is spent in teaching in the high school. The work to be followed is outlined by the supervisor in cooperation with the special teachers. Monthly meetings are held for discussion and the outlining of plans. It is noted that the work in domestic science is organized as a unit throughout the grades and high school. As the work develops it will be necessary to release the supervisor from much of the teaching that is now done in order that more time may be given for supervision throughout the school system.

The supervisor of music and the supervisor of penmanship are responsible for the work in the elementary field. There is not in these subjects the articulation between the elementary and high school work that is observed in several other phases of the work.

The supervisor of industrial arts, like the supervisors of drawing and domestic science, has given considerable time to actual teaching in the high school and in the grades. This work, however, is developing rapidly. Every effort is being made to articulate the industrial work in the schools with the community activities. A large program is under way in connection with the development of the school plant which will provide for the industrial work through proper facilities in the elementary, intermediate and secondary fields. The limitations that have been placed on this work in the high school, because of limited space, will be relieved when larger provision has been made for the shop work and courses have been broadened to meet the demands which are already under consideration by the local school authorities.

The extension work in Niagara Falls is unique. It is broad in its organization, including the evening schools, Americanization in school, home and factory, extension lectures, and other work of this general character. The city has wisely planned the organization of the extension work as a part of the educational program carried out

by the board of education under the supervision of the superintendent of schools, for which regular provision is made in the annual budget. This work is far-reaching in its influence and has reached in evening schools and in adult classes over 1800 people. Those in charge of this work have kept constantly in mind the importance of keeping the work in close touch with community needs. Other cities might well note the progress that Niagara Falls has made in this special field.

The supervision of the high school is under the immediate direction of the high school principal who is assisted by a vice principal, a woman who acts as a supervisor of scholarship and attendance records and also as a supervisor of girls. Although the high school has a registration of approximately 1000 pupils and a teaching staff of 40, there are no heads of departments. The school suffers because of this lack. The principal would be greatly assisted by department heads in following the classroom instruction and in directing the work of the classroom teachers toward definite and proper objectives. In other words, in the Niagara Falls High School there is too great a gap between the school administration and the individual members of the student body. A departmental organization, or something similar, as may best be worked out, would possibly simplify administrative problems and would also enable the school to meet far better the needs of the individual pupils in the classroom. The larger technical needs which the high school should meet are appreciated by the local school authorities. When this larger program for the secondary work is clearly in mind, the development of a broader plan for administrative and supervisory control in the high school will become imperative.

5

TEACHING STAFF

The present teaching staff in the city of Niagara Falls consists of 270 teachers, supervisors and principals. Of this number, 214 are in the elementary schools and 43 are in the high school, in addition to which are the vocational teachers, special teachers and supervisors.

Elementary School Teachers

There has been shown unusual care in the selection of teachers. Compared with many cities, the staff shows a high percentage of professionally trained teachers. It is true that there are many teachers who hold local certificates and who have had no professional training. But this is not true of those teachers more recently taken into the school organization. The rules of the board of education which have been in effect several years provide as follows:

"No teacher shall be employed in this city who is not a graduate of a college or state normal school, and who does not hold a valid teachers certificate. Temporary substitutes are excepted when teachers with above-described qualifications are not available.

"No new high school teacher shall be employed unless such teacher shall have had at least one year's successful experience in teaching in a secondary school, or an institution of equal or higher rank, and is a graduate of an approved course in a regularly established college or an institution of equal or higher rank.

"For the year beginning September 1915, and thereafter, no new teacher shall be employed in the grades unless such teacher shall have had at least one year's successful experience in teaching. This requirement may be waived in case of graduates of Niagara Falls High School having necessary qualifications."

Of the 176 elementary school teachers who filled out questionnaires relative to their training and experience, 153 or 87 per cent have had at least one year of professional training beyond the high school. There are 124 who have had normal school training, and 7 with college training, or 74 per cent who have had at least two years of professional training. In addition to those who have had training class, normal school, or college training, many have taken advantage of the opportunity for professional training at summer sessions. Of the teachers of this group, 108 have taken work at one or more sum-

mer schools. This is indicative of a good professional spirit on the part of the teaching staff. This interest in professional improvement is more apparent among the younger teachers than among those who have been longer in the service.

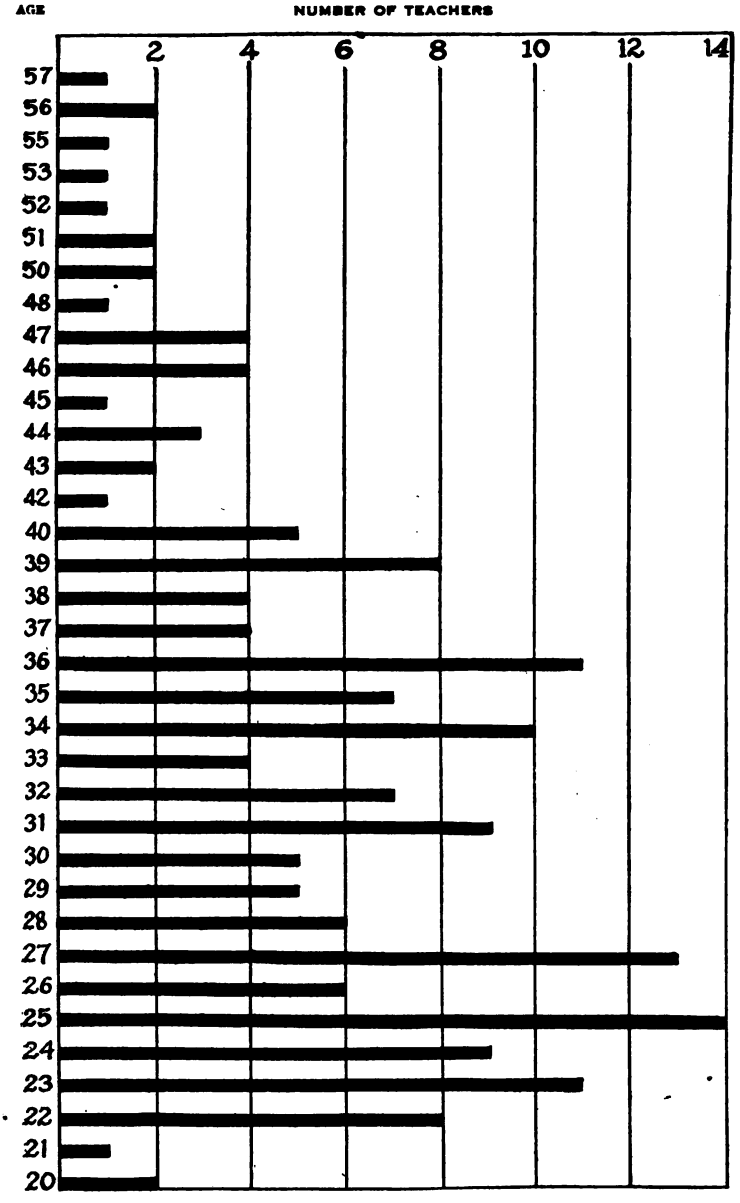

CHART 1 — Showing the teacher distribution according to age

Age

The range in the ages of the teachers in the elementary grades is from 20 years to 57 years. Of the 176 teachers, one-half are between 20 and 31 years of age. The first quartile is 25 years, the median 31 years, and the third quartile 37 years. Chart 1 shows the age distribution of all elementary teachers.

The teaching staff in the elementary schools is apparently youthful or in the best years of life. Practically none are in advanced years.

Experience

Complete data were not given for all teachers of the group covering their teaching experience. Of the 176 teachers, 15 failed to give this item. The information is available therefore for only 161 elementary school teachers. Of this number, 85 or more than one-half have had a total teaching experience of not to exceed 8 years.

The first quartile is at five years. As a matter of fact, 61 teachers, or over 33⅓ per cent, have had not to exceed 5 years' experience in teaching. The median is 8 years and the third quartile is 14 years. How apparent it is that few teachers reach maturity in the service.

Salaries

In June 1919 the salaries of 175 elementary teachers and principals ranged from $550 to $2000. The median salary for the group was $825. Forty-seven teachers, or over 25 per cent, received $700 or less. Fifteen teachers were receiving $650; eleven teachers $600, and four teachers $550. Notwithstanding the fact that the groups at $950, 25 teachers, and $1000, 24 teachers, were reasonably large, only 13 teachers were receiving in excess of $1000; eight of these were receiving $1300. Those at this end of the scale are principals. It should be observed in this connection that the schedule was in process of readjustment and the steps under consideration should be noted.

The salaries received by the teachers reflect the 1916 schedule which was as follows for kindergarten, primary and grade teachers:

Elementary Schedule, 1916

First year	$500
Second year	550
Third year	600
Fourth year	650
Fifth year	700
Sixth year	700
Seventh year	725
Eighth year	750
Ninth year	775
Tenth year	800

This schedule, with an initial salary of $500 and 10 years' service necessary to reach a maximum only $300 above the minimum, explains the median salary of $825 in June 1919.

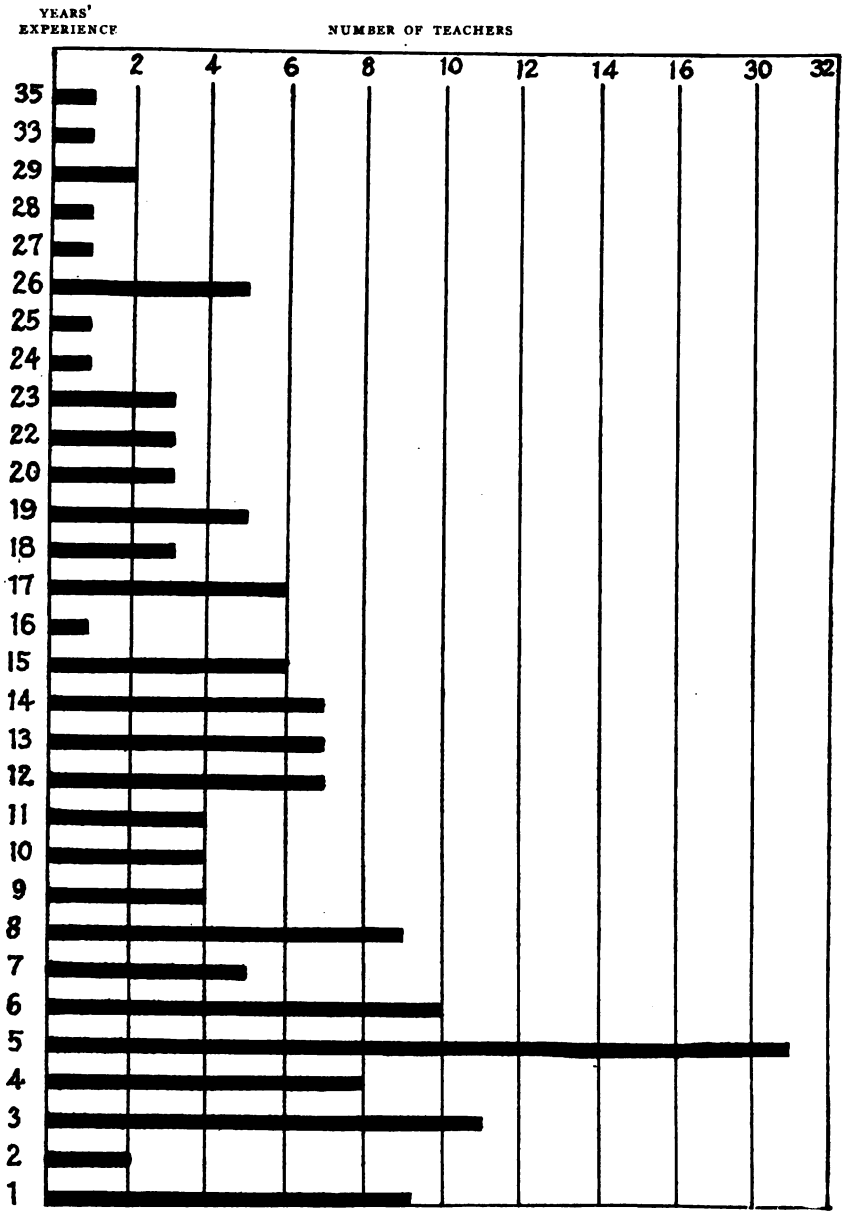

CHART 2 — Showing the distribution of teachers according to the number of years teaching experience

In March 1919 the board of education after giving the question careful study adopted the following schedule for elementary teachers for the school year 1919–20:

First year	$800
Second year	900
Third year	1000
Fourth year	1100

This schedule, however, was not put into effect on account of pending statewide legislation and the action was rescinded until the provisions of the statute were determined. As a result of the legislative action the board of education in 1919 adopted the following schedule for the year 1919–20:

Salary Schedule, 1919–20

First year	$800
Second year	900
Third year	1000
Fourth year	1100
Fifth year	1200
Sixth year	1300
Seventh year	1400
Eighth year	1500
Ninth year	1600

Additional increment for superior work.

Following the passage of the Lockwood-Donohue bill by the Legislature of 1920 the board of education in Niagara Falls did not immediately adopt the new schedule but modified the schedule for the elementary teachers given immediately above by adding $300 to the salary of each teacher. This resulted in the following new schedule for the year 1920–21:

Salary Schedule, 1920–21

First year	$1100
Second year	1200
Third year	1300
Fourth year	1400
Fifth year	1500
Sixth year	1600
Seventh year	1700
Eighth year	1800
Ninth year	1900

It is of interest to note that on the adoption of this schedule for the year 1920–21 it was further provided that all teachers of 10 years' experience, 3 of which had been in Niagara Falls, were to receive

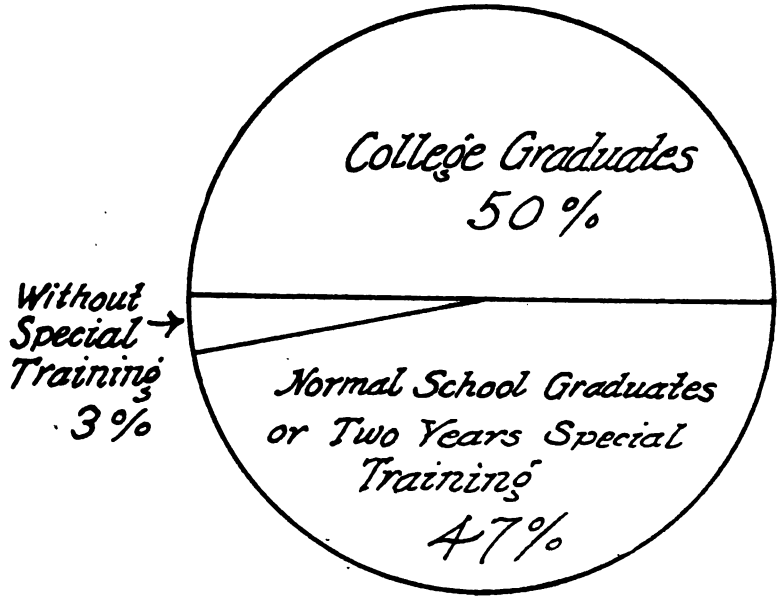

FIGURE 1 — Professional training of high school teachers

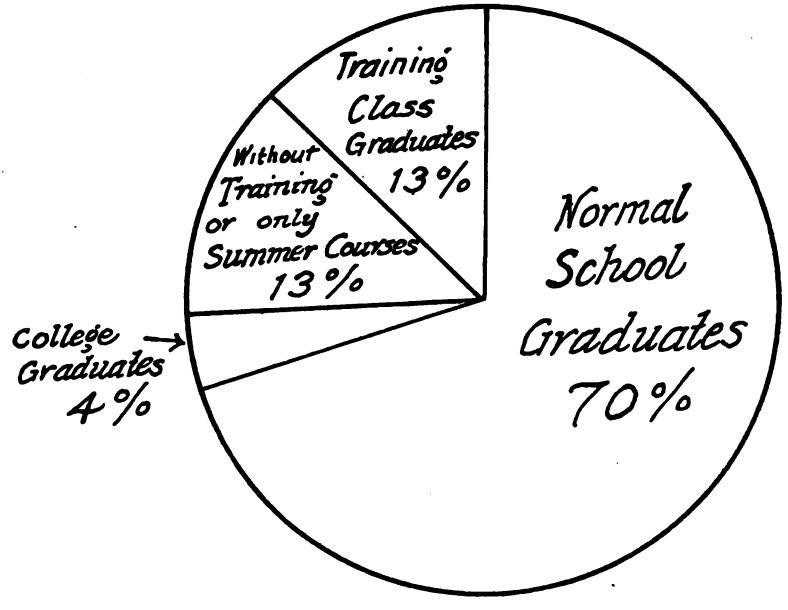

FIGURE 2 — Professional training of elementary school teachers

the maximum. Teachers not meeting the maximum requirement were given fewer increments according to experience. On account of this provision, 76 elementary teachers were advanced to the salary of $1900 for the school year 1920–21.

It may be observed that in June 1919, the salaries of all elementary school teachers, including principals, varied from $550 to $2000, the median salary for the group being $825. In October 1920, the salaries paid elementary school teachers and principals varied from $1100 to $3100, the median for the group being $1700. In case of the elementary school teachers, as is noted later in regard to the high school teachers, the median salary had more than doubled within a period of 16 months. This is indicative of the splendid spirit that has been shown by the local school authorities in providing more adequate salary schedules for all classes of the teaching service.

A comparison of the successive salary schedules which have been adopted by the board of education in Niagara Falls during the past few years indicates very clearly the splendid effort that has been made by the local school authorities in providing very properly for increased compensation on the part of the teaching staff in the elementary schools. The minimum salary paid a teacher in the elementary schools during the school year 1920–21 is $300 above the maximum salary of $800, and $600 above the minimum salary of the schedule in effect in 1916.

It may further be noted that the maximum salary of the schedule of 1916 became the minimum salary of the schedule for the school year 1919–20, that the maximum salary of the schedule adopted in March 1919, although this was modified later during the same year, is the minimum salary for the school year 1920–21.

Another advance step taken by the board of education in Niagara Falls in connection with the salary schedule of the elementary school teachers provided for granting of full credit for previous experience so that during the school year 1920–21 many teachers went immediately to the maximum amount available on the schedule. These salary schedules for Niagara Falls are of interest not only because of their local application but also on account of the illustration which they provide of the very definite results of recent statewide salary legislation. A city with a salary schedule such as that of Niagara Falls is in a position to command in its teaching service those who meet the very best professional requirements.

High School Teachers

Of the 38 high school teachers who submitted records of training and experience, 18 are college graduates, 18 are normal school graduates or have completed some special professional course covering at least two years. Of the remaining two, one received her training in various institutions in France equivalent to college training and the other has had no training of a professional character.

There is apparently an appreciation on the part of the secondary school teachers of the need of continued professional training. Of the high school teaching staff, 23 have taken one or more summers' work in colleges or other teacher-training institutions. Twelve of the normal school graduates and 11 of the college-trained teachers have had either graduate work or courses at summer sessions. The following work is noted: one has the master's degree; two have one year of college work in addition to the two-year professional course; one has taken a full college course following normal school, and has also done work toward a master's degree; nine have taken one summer's work; four, two summers' work; three, three summers' work; four, four summers' work; and one has continued professional study for eight summers.

Professional Training

It is apparent that the teachers in the high school show the same tendency to continue professional training as was noted in the elementary school teaching staff. Niagara Falls was one of the first cities to make a special provision in the salary schedule for increase in compensation to those who complete courses of study at approved summer schools. What effect this may have had on the present staff is not known, but there is reason to believe that the influence has been marked.

The salaries paid the high school teachers in June 1919 varied from $850 to $1600. The median of the salary schedule paid the secondary school teachers was $1100.

TABLE 4

Salaries paid to high school teachers 1918–1919

Salary	*No. teachers receiving*
$850	2
900	2
950	1
975	1
1000	7
1025	1
1050	4

TABLE 4 (*concluded*)

	Salary	*No. teachers receiving*
M	$1100	2
	1150	2
	1200	6
	1300	6
	1400	1
	1500	2
	1600	1

That the salary schedule for high school teachers in Niagara Falls has been improved greatly during the past few years may be noted from the changes made by the board of education. In 1916 the salaries for high school positions were fixed at a minimum of $800 and a maximum for the ninth year and thereafter of $1000.

Salary Schedule, 1916

First year	$800
Second year	825
Third year	850
Fourth year	875
Fifth year	900
Sixth year	925
Seventh year	950
Eighth year	975
Ninth year and thereafter	1000

An annual increment of $25 seems almost incredible. And yet hundreds of cities even more recently than 1916 have adopted schedules less satisfactory than the above. The amount was not sufficient to command the necessary service, and in March 1919 the schedule was revised.

Salary Schedule, 1919

	Women	*Men*
First year	$1000	$1400
Second year	1100	1500
Third year	1200	1600
Fourth year	1300	....
Fifth year	1400	....

The maximum of the old schedule became the minimum of the new. The annual increment, which had been $25, became under the new schedule $100.

Further revision in the salary schedule for the high school teachers was made following the salary legislation of 1920. The minimum salary for women teachers in the high school was made $1300 with

an annual increment of $100, the maximum being $2100. The minimum salary for men became $1500 with a maximum of $2300.

Salary Schedule, 1919–20

	Women	*Men*
First year	$1300	$1500
Second year	1400	1600
Third year	1500	1700
Fourth year	1600	1800
Fifth year	1700	1900
Sixth year	1800	2000
Seventh year	1900	2100
Eighth year	2000	2200
Ninth year	2100	2300

The same provision was made relative to the allowance for experience as was done in the case of the elementary school teachers. Teachers who had at least 10 years' experience, 3 years of which were in Niagara Falls, would receive the maximum salary. As a result, 17 high school teachers during the year 1920–21 were advanced to a salary of $2100.

An analysis of the successive salary schedules in the high school during the past few years shows the rapid increase that has been made in the salaries paid to the secondary school teachers. In June 1919, the salaries paid the high school teachers varied from $850 to $1600 with a median salary of $1100. In October 1920, under the schedule adopted for the year 1920–21, the salaries paid high school teachers other than the principal and vice principal varied from $1300 to $2300, the median salary being $2100. In other words, the median salary paid high school teachers in Niagara Falls had more than doubled within the period of 16 months.

Tenure of Teaching Service

Mention has already been made of the teaching experience of those employed in both elementary and secondary schools in Niagara Falls. It may be of further interest to note the facts with regard to the tenure of the teachers in the city school system as of October 1920. This information covers 263 teachers employed at that time. Of this number, 55 teachers were serving their first year in Niagara Falls, 40 were serving their second year, 25 their third year, and 21 their fourth year in the local city school system. In other words, 141 teachers out of 263, or more than one-half of the teachers in service, had been teaching less than four years in the local school system.

One teacher has been employed since 1888, three teachers since 1889, five teachers since 1891 and from that date to the present the

teachers have entered the service every year with the exception of two. It is to be observed, however, that more than one-half of the teachers have entered upon their service in Niagara Falls since 1917. The excellent salary schedules that have been recently adopted should prove an effective factor in lengthening the teaching tenure and the average experience of the entire teaching staff in both elementary and secondary schools in Niagara Falls.

Summary

The teaching staff in Niagara Falls has been selected with unusual care. Compared with many cities, the staff shows a high percentage of professionally trained teachers. Approximately less than 25 per cent of the teaching staff are local teachers.

Teachers now entering the service in the elementary schools must show the completion of a state normal school course or two years of professional training beyond graduation from a four-year high school course. High school teachers must be graduates of an approved four-year college course and have had at least one year's successful experience in teaching. Approximately 75 per cent of the present teaching staff have had at least two years of professional training beyond high school.

The median age of the elementary teachers is 31 years. More than one-half of the teachers have had a teaching experience not exceeding 8 years.

The salary schedule for both elementary and secondary school teachers has been very considerably increased during the past two years. The median salary of the elementary teachers in 1919 was $825. In 1920 the median salary for the group was $1700. The median salary in the high school in June 1919 was $1100. The median salary for the high school group in October 1920 was $2100. This indicates the spirit that has been shown by the local school authorities in providing more adequate salaries for all classes of the teaching service.

A large percentage of both elementary and secondary school teachers have taken every advantage of opportunities for continuing professional training at summer sessions in colleges and universities. The recognition which Niagara Falls has given for many years to those who complete professional courses of study at summer sessions has undoubtedly had a marked influence on the teaching service.

More than half of the teachers in service in June 1919 in the Niagara Falls schools have been teaching less than four years in the local system. The recent increases in the salary schedules should prove effective in lengthening the tenure of the teaching staff.

6

ELEMENTARY COURSE OF STUDY AND INSTRUCTION

The course of study that is offered in the elementary grades in the schools of Niagara Falls includes all the so-called common branches — reading, writing, spelling, language, arithmetic, geography and history. Special subjects including drawing, music and physical training are given throughout all grades under the direction of special supervisors. Beginning with the fourth grades, courses in industrial arts are given to the boys and sewing and domestic science courses are given to the girls. This is one of the features of the work in the elementary grades.

In the earlier discussion of the program of supervision somewhat general outlines have been presented covering the plans followed in the elementary school work. In the present chapter there is presented a series of summary reports made after careful classroom observations of the elementary school work.

TABLE 5

The different subjects in the elementary school course of study in Niagara Falls, and the grades in which each subject is taught

Subject	*Grades*							
	1	2	3	4	5	6	7	8
Reading	X	X	X	X	X	X	X	X
Writing	X	X	X	X	X	X	X	X
Spelling	X	X	X	X	X	X	X	X
Language	X	X	X	X	X	X	X	X
Arithmetic	X	X	X	X	X	X	X	X
Geography			X	X	X	X	X	
History					X	X	X	X
Drawing	X	X	X	X	X	X	X	X
Music	X	X	X	X	X	X	X	X
Nature study	In drawing and oral and written composition							
Hygiene	X	X	X	X	X	X	X	X
Physical training	X	X	X	X	X	X	X	X
Industrial arts				X	X	X	X	X
Sewing				X	X	X	X	X
Domestic science							X	X

Reading

The information on which this report of the work in reading in the public schools of Niagara Falls is based was obtained through observations made in the various grades of several schools, through interviews with the principals and through a conference with the

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supervisor of primary grades. Except in a few instances in schools in which there were duplicate grades, observations were made in essentially all classes. The schools in which such observations were made were Fifth Street School, Cleveland Avenue School, Tenth Street School, Twenty-fourth Street School, Thirteenth Street School, Twenty-second Street School, Third Street School.

While there was no effort to make a complete study in all schools throughout the system, it is thought that the schools selected were fairly typical and that conclusions that might be reached by observations in all the schools would not differ materially from those recorded in this report.

The facts and impressions herein presented will be recorded under the following topics: Reading in grades 1 to 3, Reading in grades 4 to 6, Reading in grades 7 and 8.

Through the activities of a supervisor of primary grades much progress has been made in the discussion and formulation of the motives and methods regarded by recent authorities as most promising in the achievement of desired results. The supervisor has made a detailed study of the manner in which the teaching of reading is motivated and worked out in classroom practice in the public schools of the city of Rochester. In the detailed outlines that she has developed for the guidance of teachers in the primary grades, she freely acknowledges her indebtedness to the plans represented in the Rochester system. It may be remarked in this connection that the city superintendent, the principals and the teachers of Rochester have gone afield in a study of the theory and art of teaching reading, seeking to present the aims most desirable for this work in the various grades, the best materials and the procedures that have their foundation in correct child psychology and in the principles of sound pedagogy. For the purposes of this survey the extent to which the reader would give assent to details in the methods and procedure advocated in recent essays and reports on reading prepared by the Rochester school people is not of moment. The point to be noted is that the supervisor and the primary teachers of Niagara Falls are working on these problems intelligently and earnestly, and are taking advantage of the best methods and devices that have been worked out in other school systems.

From a weekly schedule of time allotments to various fields of study in the grade schools of Niagara Falls it appears that a reasonable time allotment is given to reading. This schedule indicates that 475 minutes weekly are devoted to reading in the first grade, 450 minutes in the second grade and 400 minutes in the third grade.

Otherwise stated, this means that there is an allotment of 95 minutes daily to reading in the first grade, 90 minutes in the second grade, and 80 minutes in the third grade. The periods allotted to phonics and word drill and to direct exercises in reading, are kept distinct. By this procedure the teacher is able to focus the attention of the children on acquiring proper knowledge of sounds and blends and to the mastery of the new words which they will meet later in the reading lesson of the day. The children's minds are free to act without interruption in the direction of thought-getting and thought-giving during the period in which sentences and brief paragraphs are read. There is no exact uniformity in the relative amount of time utilized in the various grades of the primary schools in the two classes of activities mentioned. In general the distribution is approximately on a fifty-fifty basis. In a few schedules that were examined, three distinct periods for reading were noted, namely, one for phonics, one for word drill and one for reading from blackboard or book. The difference indicated is one of detail. Emphasis is placed on the fact that mechanics in acquiring the reading art is a thing distinct from reading itself.

In the outworking of the new and formative methods in reading that are now finding expression in the primary schools of Niagara Falls, the distinct impression was obtained that the teachers are responding intelligently and heartily to the new plans. While the outlines presented by the supervisor are stimulating in variety and in suggestiveness, it was noted with satisfaction that teachers are developing new and interesting devices to vary their work. A commendable feature of instruction, particularly in grades 1 and 2, was noted in the emphasis placed on the development of skill in visualizing word groups, brief phrases consisting of closely related words and short sentences. Such groups were often indicated on the blackboard by a sweeping stroke of the crayon indicating the words inclusively, or by holding before the class perception cards on which were printed the phrases or sentences whose quick visualization was required.

From the observations made it was not apparent that dramatization has as yet found its best expression in the classroom practice of these schools. Something in this direction has been undertaken by a number of teachers, but it may be described as only a beginning. Thus far in the procedures of the primary classroom this instrument for obtaining the material and wide-awake expression of thought among little people does not appear to have commanded the skill and attention that its value deserves.

The standard time schedule which has been worked out by superintendent and teacher shows an allotment of 40 minutes daily to reading in the fourth grade, 35 minutes daily in the fifth grade and 30 minutes daily in the sixth grade. On the assumption that pupils have gained during the first three years of their school life a good mastery of the mechanics of reading and that they have made satisfactory progress in the ability to interpret thought correctly and readily from the printed page, the teachers of the intermediate grades will be free to give their attention to the larger development of the subject.

New aims, new points of departure, different methods are now requisite. Pupils at this point in their training are entering on new enterprises in study. The curriculum expands, taking on new subjects. Fundamental to success in these grades will be thought-getting and thought-giving in their broader features. If satisfactory progress in study is to be made from this time on the pupils must possess or acquire as quickly as possible the ability to get connected thought with facility from the printed page and to tell it or write it in connected paragraphs with fair fidelity to the story. Apart from the knowledge that the pupil must acquire from the textbooks that he will now study, there is presented to him the added problem of acquiring collateral information from various sources and of utilizing this information orally and in writing for the larger educative purposes of the classroom. Obviously then he must be brought in contact with a variety of literature. Under ideal conditions the grade schools would be equipped with a wealth of material for reading, well adapted to the age and experiences of the pupils, of interesting and informing type, and having an appeal to youth that will win pupils to its spirited pursuit.

In these grades there should be much silent reading for rapid throught-getting, and some oral reading for the purpose of securing correct pronunciation and pleasing expression. Work with the dictionary, in order to assure the correct understanding of words, will be necessary. Above all else the reading must be vitalized by inspirational teaching. There must be leadership which points the way to reading afield in the stories of lands and peoples. In the literature taken up in the classes in reading and in English opportunity will be afforded on every hand for the teacher to utilize every resource arising from her wider experience and from her larger insight. Daily preparation, plans thoughtfully worked out in advance, having in mind not only the day's lesson but the goals of final achievement for the year, will be requisite to the highest success.

It would appear that there is not a clear definition of the aims that should characterize the teacher's work in these grades, and there is insufficient store of materials on which teachers and pupils may draw in the advancing demands of their work. In the absence of definitely formulated standards of procedure and of supervising leadership, the reading in each grade room is largely what the individual teacher makes it. Naturally there is considerable work of the routine type that may be described as "hearing the lesson." In a few instances skilful attention to silent reading, followed by oral work in connected paragraphs, was observed. In essentially all grades of this group there is much attention to the pronunciation and the meaning of new words. On the whole, judged by common standards, the pupils in the various grades read aloud in a manner creditable to their degree of advancement in school. Relatively speaking, the slow pupils in the reading classes — those who show distinct weakness in ability to get the thought in a sentence or a paragraph, and to express it with reasonable fluency from the printed page — are few in number. Any criticism expressed or implied in this discussion points in the direction of a better understanding of ideals of instruction in these grades and a more purposeful and well-directed procedure in the outworking of these ideals.

The amount of time allotted to reading in the seventh and eighth grades is 100 minutes weekly. This allotment does not include a considerable amount of time that is devoted to reading in connection with the study of English in these grades. In the reading classes proper the selections used are of a high type such as are found in the more advanced literary readers. Among the selections taken up when the classes were visited were Hawthorne's "Great Stone Face," "The Siege of the Castle," from Ivanhoe, and some passages from Irving's "Knickerbocker History of New York." A few poems were also used, such as Longfellow's "Chambered Nautilus," Joaquim Miller's "Columbia" and the war poem, "On Flanders Field." It will be noted that variety and standard literary quality characterized the various selections.

In conducting recitations teachers often asked pupils to step to the front, reading aloud a page or more each. Exercises in retelling the story or the incidents read were common. There was also some discussion of personages and incidents but comparatively little that was suggestive of "problem work." In one or two instances pupils had been expected to read silently the selection before coming to class, and in such cases the day's lesson was begun by a detailed oral

recall of the story by different pupils. There was also considerable attention given to the pronunciation and meaning of new words. In most classes the attention given to the pupil's position in standing to read and to matters of expression, were commendable.

The study of the pedagogics of reading in the seventh and eighth grades has not had the attention from teachers and principals that it has received in the lower grades. This is to be expected as pupils are supposed to become fair masters of the mechanics and of the art of reading in grades below the seventh. Whatever they do with reading thereafter is often supposed to be for the purpose of getting and giving information or for the purpose of interpreting orally the thought of a given selection. A considerable fault may lie in the fact that definite goals of achievement have seldom been marked out for the teacher's guidance. The general use of oral and silent reading tests would be very helpful in fixing reasonable standards; in fact this work is already under way, following up the preliminary tests given in connection with the survey.

If pupils are to be expected to read poems in a natural and pleasing way, all tendencies to " sing-song," to exaggerated cadence, must be checked up rigorously in the earlier grades. No stronger single factor in the direction of such objectionable habits in reading poetry can be found than the procedure whereby pupils are drilled on " memory gems " in concert recitation. The habit of reading poems in this manner is all too common. The boy's reprehensible manner of reading Joaquim Miller's " Columbia " or the poem " On Flanders Field " in the eighth grade class, is simply the sequence of a habit in monotones that he acquired in his earlier years in school.

From the observations on reading in the elementary grades it is noted that the work points in the direction of a better understanding of desirable goals of achievement. The plans and methods under way promise the best results in working toward such goals.

Elementary English

It is evident that the elementary teachers in Niagara Falls are rapidly catching the spirit that should permeate the teaching of English today. This conclusion is based upon observations made in the classrooms and upon conferences held with all the elementary school teachers in the city. The work of 72 different teachers was observed. Each teacher's class was visited once; many were visited twice. It is apparent that the attitude of many of the teachers toward the work in English is broad and of the right sort.

Time Schedule

In the accompanying table is presented the per cent of time given daily to recitations in English, and the number of pupils in each grade in seven elementary schools.

TABLE 6

Per cent of daily recitation schedule given to English in the elementary schools

GRADE	A		B		C		D		E		F		G	
	Per cent of time to English	No. pupils in grade	Per cent of time to English	No. pupils in grade	Per cent of time to English	No. pupils in grade	Per cent of time to English	No. pupils in grade	Per cent of time to English	No. pupils in grade	Per cent of time to English	No. pupils in grade	Per cent of time to English	No. pupils in grade
1.....	11.8	42	8.0	46	11.7	40	11.7	48	11.7	44	11.7	41	11.7	40
2.....	11.1	43	7.8	42	11.1	37	11.1	39	11.1	36	7.4	47	11.1	47
3.....	10.0	44	10.0		10.0	39	10.0	36	10.1	38	16.6	40	10.0	40
4.....	13.3	40	13.3	42	13.3	39	13.3	39	13.5	40	16.6	36	13.3	45
5.....	13.3	42	13.3		13.3	37	13.3	28	13.5	40	16.6	42	13.3	44
6.....	13.3	43	19.3	43	13.3	34	13.3	27	13.5	41	16.6	39	13.3	38
7.....A..	9.6	27	9.6	34					13.5	31	16.6	35	13.3	35
B..	9.6	27	5.8	33										
C..	9.6	26	14.5	27										
D..	9.6	27	6.4	34										
E..	9.6	28	12.2	34										
F..	9.6	27												
8.....A..	9.6	29	25.0	29										
B..	9.6	28	19.3	30										
C..	9.6	31	20.9	34										
D..	9.6	28	20.9	33										
E..	9.6	29	20.9	36										
F..	9.6	24	19.3	31										

The fact that the seventh and eighth grade work is largely centered in schools A and B appears to offer a natural differentiation between the work of the first six grades and that of the seventh and eighth. This distinction had a marked effect upon the character of the English work being done by each group of teachers. There was an evident advance in the nature of the work in the seventh and eighth grades over that in the first six grades. In each school the work in the first six grades is in the hands of the grade teacher. In school B it is also so arranged in the seventh and eighth grades. In school A, however, English is taught on a departmental basis in the seventh and eighth grades.

The per cent of time given to elementary English in ten American cities tabulated in 1905 by B. R. Payne in his study of elementary education in the United States, France, England and Germany varied from 10.3 to 30.9 per cent. The average time was 14.4 per cent. The average number of minutes a week given to elementary English in each grade in these cities was as follows:

Grade	1	2	3	4	5	6	7	8
No. of minutes.....	130	146	144	158	176	224	254	256

School A gives 10.4 per cent of each school day to instruction in English while school B gives 14.5 per cent to such instruction. Some factors to be taken into consideration in determining the time daily to be devoted to English are the size of the class, the grade, the speech ability of the pupils, their mentality, and their nationality. These or other important factors in time assignments are often not considered in determining grade schedules.

The time schedule in school A provides for an English recitation in grades 7 and 8 of 30 minutes, but another 30 minutes is to be devoted to study in preparation of the work for the following recitation. This period of study is not supervised by the teacher of English. It is not clear therefore that it should be considered as part of the time given to English in these grades. Where a period of 60 minutes is divided into two parts, it should be provided that the period of preparation be spent in a room where the pupils are under the immediate direction of the subject teacher. Where that is done, much good may be looked for. Where that is not done, the results are apt to be indifferent. An excellent plan is to lengthen the recitation period to 45 or even to 60 minutes and provide that a part of the time be given to directed study under the guidance of the class teacher.

In some instances the narrowness of the instruction was marked. Much of the time was given to the use of words, to analysis, or to some other phase of instruction equally restricted. There was little use of variety to arouse interest. Interest was often lacking with the result that the recitation was lifeless. It was noted that when definitions were called for, frequently an application was made, often it was not. Drill in such matters proves effective. The force of a definition is invariably lost when children are not allowed to apply the definition in a practical way. When this was done the diagrams were for the most part neatly made and accurate. The use of the diagram, however, as a method of analysis is not to be encouraged. At best it is but a crutch upon which pupils are inclined to lean to the detriment of their ability to make a mental analysis. As an illustration its use is not to be condemned; as a system its use is to be avoided.

In general most pupils in Niagara Falls seem to have gained the ability to write letters suited to their grade and age. In the upper years of one school, pupils were found to be carrying on an actual correspondence with other pupils in distant parts of the country. Here was real motivation with an added element of interest and results commensurate with both. It is to be regretted that more work

of a similar nature was not being done in other schools. There is an inclination on the part of some teachers to give their pupils very little time to think. This inclination is so marked at times as to be very noticeable. It would be worth while for teachers to encourage pupils to cultivate the habit of thinking in English recitations even in the elementary schools.

Considerable time seemed to be given to picture study. Some of the recitations in this type of work seemed to have been prepared beforehand and to have the character of review work. Little opportunity was thus given to observe how the study of pictures was undertaken and what aim the teacher put before her pupils. The monotonous manner, in measured rhythm, in which the majority of the pupils recited was evidence that the practical value for the pupils was limited. Stories of "Jack and Jill" and "The Three Bears" were sometimes told without the childish spirit of story-telling being present. There were, on the other hand, several excellent illustrations of just how the work ought to be done. Notable among these was the story of "Cinderella," told in language much the child's own, with good expression. Of great value to a class, composed mostly of foreigners, was a recitation in which these pupils applied to the picture descriptive words arranged in short sentences. Here was one of the best bits of training in distinct, correct speech met with anywhere in the city. It is very possible that right motivation was largely responsible for the interest shown by the pupils in what they were telling as well as for the excellent training they were getting in clear enunciation and accurate expression.

Closely akin in aim to story-telling based on pictures from which pupils talk is the reproduction of stories read in books or told to the class by the teacher. Several reproductions were made in good order with the thought logically expressed in a delightful manner, valuable to children. Some of these exercises were, however, reproduced in the language of the book, sleepily and perfunctorily. This gave one the idea that the work was done as a duty, not as a pleasure. Occasionally the reproduction was made in concert by the whole class with little benefit to the individual child. Reproduction of stories told to the child, or read by him, is one of the most readily available means of developing a child's power of expression. But unless the aim of developing power of expression be continually present the reproduction is of doubtful value. Valuable results in reproducing can come only from suitable stories. "The story with well-defined beginning, middle and end is obviously the best to begin with. If the parts are logically connected, one part will call for and suggest

the next." "Cinderella," for instance, is helpful in that particular. Here the opportunity of "filling in" encourages the child, as his ability grows, to add descriptive touches, the products of his imagination. Thus there may result from reproduction, skilfully guided, not only spontaneous self-expression in correct English but also an exercising of the imagination productive of power to shape the growing idea. But the aim, the method, and the practice must be right. The work in the upper grades involving the conversational powers of the pupils was oftentimes effective.

Many indications appeared that teachers were giving considerable drill in the use of words. In the lower grades such words as *eat, ate, sit, sat, did, done, see* and *saw* were noted in this connection. In one instance a game was resorted to and in others various devices aided the drill. In an upper grade an effective bit of teaching was witnessed when a class discussed the distinctions in the use of the words *to, too, two.* Here the pupils were given time to think and the constructive work was reenforced by plenty of actual practice at the blackboard. In another grade the distinctions in the use of the word *only* were dwelt upon. The lesson was so presented that the pupils were keen in their grasp of the distinctions drawn. Such drill in the accurate use of words and in correcting errors made in written and spoken English should be both "incidental and systematic." In the systematic drill the attention of the pupils must first be fixed on the correct forms in order to make them matters of habit.

Dramatizations were too infrequently attempted; in several schools none was seen. In many instances observed the dramatization had been worked out beforehand under the direction of the teacher, so that the actual performance lacked the spontaneity and the simplicity to be expected in children. Too much planning was resorted to by the teacher to allow for the development of the creative imagination or the inventiveness of the children. Dramatization should aid in making clearer to children the pictures of a story and by giving relaxation enable them to get a surer understanding and appreciation of the characters. Hence there "should be no formal work, particularly in the lower grades, unless for a special occasion. As many children as is practicable should be asked to help in playing the story."

Oral expression in the elementary schools is receiving attention. The mechanics of oral expression, however, such as breathing, voice training, posture and enunciation are being neglected. At the most critical period in the child's vocal development practically no training is being given.

Very little attention, likewise, is being given to correcting such matters as speech defects of foreign children, blending words, clipping final syllables, and mispronunciations. No well-defined plan for improving and strengthening the organs of speech was anywhere observed. It was not evident that correct posture was being seriously considered in the school program.

There should be a definite program of oral English which should provide for a large amount of time in the lower grades — seven-eighths of the time devoted to composition in grade one is sometimes suggested — and a smaller amount in the upper grades — one-half of the time devoted to composition in the eighth grade. There might well be greater uniformity in the time devoted in the various grades throughout the city.

The relation between oral and written expression is likewise important. Oral composition is of service primarily in written composition. Little indication was given anywhere that consciousness of such a relationship existed, and no specific attempts to cultivate it appeared. Writing and speaking are "two forms of one mental act." In the elementary school oral language work is the "natural preliminary to written work from the necessity of learning to speak before learning to write." Occasions that require pupils to use their natural powers of expression are the key to success in oral work. When such occasions are lacking the success is mediocre. It is the duty of teachers in the elementary schools to create these opportunities where they are not present ready made.

Attempts to motivate work in English or to make use of interest as a means or as an end were seldom observed. Interest must be depended upon to furnish "motives for the acquisition of knowledge and for the formation of right habits of thought and action." In story-telling, in dramatization, in matters of technic, in oral and written composition, in the reading of literature, too little effort was made by the teacher to show the children the need they have, personal or social, of the thing being taught. There is a utilitarian as well as a cultural value to English. Both must be recognized by teachers in the elementary schools and put before the pupils gradually as motives for the accomplishment of certain results. Written and oral compositions should arouse the pupils' interests; they should be used for specific purposes, with definite audiences in mind. One instance in letter writing has already been noted. Rules of grammar, learned apart from composition, have very little effect on the use of English as a means of expressing ideas. Put an adequate motive before the child and the most commonplace subject assumes a different aspect.

The teaching of English, even in the elementary school, should be socialized and vitalized to the extent that pupils are trained to recognize at their true value motives and methods having human interest always present.

Some efforts to correlate written composition with the life of the pupils in the community were observed, however, in certain schools. These are worthy of recognition. Practically no attempts were noted, on the other hand, to correlate the work within the school. One instance stood out unique in which hygiene and English in a fourth grade were being correlated. A valuable opportunity is lost unless the English in a school is closely bound up with the geography, the history, and many other subjects.

All elementary schools lacked libraries.[1] In one school there are about 200 books in the office, most of which are not available for the use of pupils. In another school there were a few volumes scattered throughout the different rooms. In each building there should be a library in a room by itself, under the charge of a librarian. This should be for all the pupils, but particularly for use of the seventh and eighth grades. If we expect to build up in our pupils a love for literature, we must make literature accessible under skilful guidance in the school. The library in the school does not need to take the place of the city library, but it does need to supplement it in its work. If it is impossible for the board of education to establish a library in each school, a branch of the city library might be installed to which pupils should have free access.

Much would be gained by having the subject of English carefully supervised from the first grade through the twelfth. There would be less effort wasted by individual teachers, more unity in the work within different schools, and closer articulation possible between the different grades and between the grades and the high school.

To meet the new trend in the teaching of English today it is necessary to get a wide acquaintance with literature, both for itself and for its effect upon the oral and written expression of the pupils. To help accomplish that end it may be necessary to devote more time to the study of English in the grades. Enough time should be devoted in each grade to secure results commensurate with at least the minimum requirements suggested in the syllabus in elementary English. When the time allotment has been made sufficient, it will be possible to broaden the reading of literature in the grades to meet more completely the suggestions set down year by year.

[1] Large purchases have since been made.

Arithmetic

The report on arithmetic is based on the observation of classroom instruction conducted by the teachers. In most cases the instruction was under normal conditions, that is, on the assigned lesson of the day and at the regular recitation period. Ninety-nine classes were inspected. Most classes were inspected by two men. Each man made his inspection independent of his associate. The inspections were made on different days. This is a composite report made from their notes.

TABLE 7

Class registration and per cent of recitation time daily given to arithmetic

GRADE	*School 24*		*School 22*		*School 10*		*School 3*		*School 13*		*Cleveland School*		*Fifth St. School*		% of da. in rec. in 10 American cities in
	No. in class	% of da. in rec.	No. in class	% of da. in rec.	No. in class	% of da. in rec.	No. in class	% of da. in rec.	No. in class	% of da. in rec.	No. in class	% of da. in rec.	No. in class	% in da. in rec.	
1 B	40	11.7	41	11.7	48	11.7	48	11.7	40	11.7	42	11.7	41	11.1	13.6
1 A	40	11.7	41	11.7	48	11.7	..	....	44	11.7	44	11.1	22	11.1	
2 B	46	11.1	17	11.7	38	11.1	39	16.6	37	11.7	41	10.0	16	11.1	15.4
2 A	47	11.1	47	11.7	36	11.1	..	....	40	11.7	41	10.0	51	10.5	
3 B	40	10.0	40	13.3	36	16.9	36	16.6	38	16.6	45	16.6	37	16.4	18.2
3 A	40	10.0	23	11.7	38	16.9	..	....	39	16.6	45	16.6	16	16.4	
4 B	40	16.6	35	13.3	40	16.9	39	16.6	36	16.6	42	16.6	17	16.1	18.0
4 A	45	16.6	36	13.3	..	....	..	....	39	16.6	41	16.6	44	16.1	
5 B	44	16.6	42	13.3	40	16.9	28	15.0	38	16.6	42	16.6	40	16.1	17.6
5 A	..	....	..	....	..	....	..	....	37	16.6	42	16.6	20	16.1	
6 B	36	16.6	35	13.3	41	16.9	..	....	34	16.6	43	16.6	17	16.1	18.3
6 A	38	16.6	39	13.3	..	....	..	....	..	....	44	16.6	44	16.1	
											7F28	17.4	33	12.9	
7 B	33	16.6	35	13.3	31	16.9	..	....	..	....	7E29	17.4	33	12.9	
											7D29	17.4	33	12.9	17.7
											7C20	17.4	33	12.9	
7 A	35	16.6	..	....	..	....	..	....	..	....	7B28	17.4	33	12.9	
											7A29	17.4	33	12.9	
											8E29	17.4	30	8.0	
8 B	..	....	..	....	..	....	..	....	..	....	8D30	17.4	30	8.0	
											8C30	17.4	30	8.0	17.0
8 A	..	....	..	....	..	....	..	....	..	....	8B28	17.4	30	8.0	
											8A29	17.4	30	8.0	

Table 7 gives the registration grade by grade and the per cent of the recitation time given to arithmetic daily. The last column is the average per cent of recitation time given in ten American cities. These per cents were obtained by Dr Bruce R. Payne in his studies of the elementary curriculums of those cities in 1904. He has formulated a proposed recitation time table, in which he allots 12.5 per cent of the total daily recitation time to arithmetic.

The factors that should determine the time allotments of arithmetic, or of any subject, and its position in the daily program are the grade, the number in the grade, the mental condition of the pupils and the character and interests of the community. Some programs in the Niagara Falls schools show that a few primary grades recite in arithmetic in 30-minute and 45-minute periods and that a few intermediate and grammar grades recite in 40-minute, 50-minute and 55-minute periods. In only a few cases do the programs show separate study and recitation periods. No definite time is assigned to supervised study. Part of the regular period is often used in this manner. "The needs of society within the probable environment of the child should be taken as a safe criterion of measurement of any subject in the elementary school curriculum."

Reliable authority asserts that formal subjects are more fatiguing than content subjects. If this be true, formal subjects should be given the best periods of the day, especially in the lower grades. In some of the Niagara Falls schools, arithmetic is taught at the close of the forenoon and the afternoon sessions.

There seems to be no uniform method of procedure in teaching the fundamentals of arithmetic. Some pupils add columns of figures upward; others add them downward. In oral arithmetic some pupils repeat each number in the column before they add it to the sum up to that number. But no pupil was observed to add by counting; by his previous drill he knew or he did not know the sum. In subtraction, multiplication and division pupils in the same grade sometimes used different methods of procedure; this difference in method was usually attended by the pupils' inaccuracies, inattention and lack of speed.

Some teachers are making commendable efforts to improve the speed and the accuracy of their pupils in fundamentals. They are meeting with varying degrees of success. Those who fail to attain the requisite speed and accuracy fail in a way to inculcate in their pupils mechanical and mental habits that lead to the desired end. Time limits in formal work concentrate the attention of pupils. Concentrated attention leads to accuracy and speed.

Ex-president Eliot says, "The system of education which minimizes the importance of accuracy of thought and of expression is relegating to a subordinate position one of the essentials of true scholarship and culture." Accurate thoughts can not be obtained with faulty or half-formed concepts. Errors in statements by pupils working in denominate numbers were largely due to the fact that they had faulty concepts of them. They had learned the tables without the use of appropriate apparatus. No teacher above the primary grades (which have a supervisor) was seen to use any apparatus or diagram in teaching arithmetic. All concepts of mensuration at least should be taught by diagrams or appropriate apparatus. Memorizing tables used in the solution of problems is the end, not the beginning, of the instruction in their use. Roark says, "It would seem unnecessary to make so trite a suggestion, but it is a fact that in thousands of schools the barren grind of arithmetic is still gone through without the use of illustrative material." Inaccurate written expressions at the board too often passed without correction, as $1/7 \times 21$ yds. $= \$3$. A pupil will never do any better work than his teacher accepts.

It is a pleasure to note that many teachers require of their pupils in arithmetic accurate oral and written statements. Here are some comments on their work: "Errors corrected in the right spirit. Pupils kept busy." "Language corrected." "The written work was denominate numbers. The work was written neatly and accurately on the board. No important principle involved in the written solution was neglected. Good work." The good work done by those teachers will be reflected in their pupils' work in the upper grades.

In the lower grades, oral expression and written expression are about equally divided. From the third grade to the eighth grade too much of each class period is devoted to written expression. All new written processes in grade arithmetic should be introduced by inductive oral expression. Success in written arithmetic is largely dependent upon this method of procedure. The written solution of problems determines the effectiveness of instruction in oral arithmetic. As a result of an investigation conducted by Jessup and Coffman a few years ago, they proposed for each grade in cities of the size of Niagara Falls, the following median per cent of arithmetic recitation time for oral work:

Grade	1	2	3	4	5	6	7	8
Per cent	42	46	40	28	25	21	13	12

"The explanations were merely the reading of the operations performed"; "no analysis"; "mental problem of practical value —

analytically explained — good attention and intelligent effort by the pupils " are some of the comments on classwork. The analysis should not be stereotyped and lead to memorizing a mess of " logical verbiage." Clear logical analysis of problems is important, if adapted to the capacity and advancement of the pupils. When the process of a type problem is understood, all verbal analysis should cease.

Successful development lessons were conducted by a few teachers; none was attempted by others. The few who did development work used the proper apperceptive basis upon which they built new concepts. Their success can be attributed in large measure to the fact that they are applying sound pedagogical principles in their teaching. Teaching involves development and training as well as instruction.

No checking of problems was observed. Pupils should be taught to prove their solutions. The check should become a part of the problem and thus be a very valuable part of the pupils' instruction. The check, when properly taught, is a most valuable way of improving the pupils' accuracy in computation and in increasing confidence in their ability.

McMurry in his " Elementary School Standards " says, " In order that instruction may affect the hopes and purposes of pupils, the subject matter must be intimately related to human interests and to the interests of children in particular." The instruction in arithmetic was too infrequently motivated, that is, related to human interests. The pupils should be led more frequently to solve problems because the answers meet some personal need of theirs.

The teachers differ much in the amount and nature of drill exercises used in class. In one grade, " the drill lacked snap "; in another, " the drill lacked system "; in another, " work showed inadequate drill on the tables "; in another, " pupils not drilled to correct errors "; in another, " excellent drill in writing and reading decimals — all well taught "; in another, " aliquot parts of a dollar drilled on — accurate statements required at all times." Drill to be effective must be regular and systematic. Jessup and Coffman in 1917 found the median per cent of recitation time favored for strictly drill work by 564 superintendents distributed throughout the different sections of the United States as follows:

Grade	1	2	3	4	5	6	7	8
Per cent	43	50	52	45	39	31	22	17

These superintendents, by requiring drill work as a part of each arithmetic recitation, acknowledge the value of such work. The authors say, " We are certain that short drill periods produce the best results " in arithmetic instruction.

Assignments of work for study hours should be improved upon in many grade rooms. Poor assignments lead to groping in the dark and to discouraging failures. The assignment should lead to independence and initiative in thought on the part of the pupils. Poor assignments lead to the teacher's doing too much of the work in the class hour. Good assignments put pupils in the mood to work and stimulate them to an active participation in the preparation of their lesson.

The pupils might be profitably drilled in estimating answers. The question, "If 5 men can do a piece of work in 10 days, how long will it take one of them to do it, if each does the same amount of work?" puzzled nearly all in a seventh grade class. Absurd answers were given, such as, 15 days, etc. A drill in estimating results would tend to avoid such answers. Estimating results is a check on misplaced decimal points and on absurd answers of different kinds. It is also a training in approximating results in practical life.

In only one arithmetic class was any portion of the recitation hour devoted to the supervision of pupils' study. Notes on this teacher's work are, "Errors corrected helpfully and in the right spirit; pupils kept busy; instruction correctly given." More teaching like that by other teachers would improve their instruction, whatever is its present standard. Hall-Quest says, "Precisely measured, experimental investigations show that supervised study improves the work of poor students." Wastes of the ordinary study hour and of home work indicate that the pupils' study periods should be supervised. The study hour should be one of the teacher's busy hours — not one of monotorial service of preserving discipline, keeping pupils at work or writing up records. She should find her pupils needing help and render the assistance unasked. She should attempt to develop their initiative. This can be done by knowing the pupils' needs and characteristics and by applying in the help rendered her knowledge of psychological laws.

In the teaching of arithmetic in the grades, much is to be commended. The teachers average well in ability as instructors and as disciplinarians. No teacher was observed who was not definitely prepared for the work of the class hour — not only for the lesson to be taught but also for the material to be used during the class hour. Most teachers command the respect and attention of their pupils. Instruction is given daily in mental and written arithmetic. The pupils' written work is usually neat and well placed on paper and on the board. Not many answers in mental arithmetic were in concert. The language of the pupils receives attention by many

teachers. The fundamentals of numbers are usually well taught. Most teachers get intelligent efforts from their pupils. There is greater uniformity of teaching in the lower grades than in the upper grades. The lower grades have the help of the primary supervisor. The Elementary Syllabus is used by the city. Long division, however, is taught in the fourth and not in the third grade.

The following suggestions may be helpful by way of summary:

1 Teachers should require of all pupils neat and legible written work.

2 Arithmetic should minister to the child's needs and should be kept within his experience, if the subject is to be motivated through interest.

3 Rationalization should receive more attention as an aid to the intelligent solution of problems.

4 Checking should be a feature of nearly every arithmetic class period.

5 Time limits should be set for written drill work in arithmetic as a training in concentration.

6 More devices for teaching numbers in the lower grades might be profitably used.

7 Estimating answers would be helpful in developing the judgment of the pupils.

8 In teaching upper grade arithmetic, time might be profitably spent in the interpretation and comprehension of problems that arise in the world's activities.

9 The supervision of the study period should be more common with all teachers.

History

Readjustment in the amount of time allotted to the various subjects of study was in progress at the time of making the survey. In previous years such allotments had been determined largely by principals or by teachers along lines of customary usage in the local school or of individual judgments as to the most desirable distribution of teaching-time. Under this procedure differences in relative time allotments were most noticeable in grades 5 and 6. Naturally the importance attached to a field of study as reflected in the daily schedule influenced largely opinion in the schools as to the relative value of studies. Without explanatory details, the statement appears warranted that heretofore in grades 5 and 6 history has occupied a distinctly minor place. The new weekly time allotments upon which a committee has been working in cooperation with the city superintendent of schools will become fully operative at the opening of the

second semester of the current year. In this schedule 60 minutes weekly are assigned to history in grades 5 and 6, and this allotment will doubtless become standard for these grades throughout the system. The new-time standard indicated should operate favorably in securing better recognition for history in the intermediate grades, leading to a larger interest among pupils and to more fruitful results in teaching. Theoretically, an hour a week for history in these grades is a fair allotment. Skilfully and resourcefully used, that amount of time should prove adequate and the resultant achievement satisfactory. Considerable will depend on the manner in which the time is distributed. In some schools it has been customary to have a 12-minute period daily; in others, three 20-minute periods weekly; in one or two, two half-hour periods weekly. The question as to which of the three procedures is the best need not be discussed at this time. This is a question, however, that may fairly engage the attention of the supervising authorities with a view of establishing a standard that will yield maximum results in class instruction. The variable size of groups in the different schools might render exact uniformity undesirable. In any event the question is one for thoughtful consideration.

Next to the determination of period-standards that will bring the intermediate grades in substantial accord, some method of outlining from month to month the subject matter and the general methods of presentation is clearly desirable. In the seventh and eighth grades where pupils have daily lessons and where in general the teachers have an adequate preparation in history, freedom, personal initiative, the choice of methods and to some extent the choice of materials on the teacher's part are indispensable to the best results. Such freedom in history teaching now exists in the grammar grades of Niagara Falls. Observations in various classrooms justify the impression that the teachers are responding appreciatively and successfully to the opportunities that are thus accorded them. In no case that came under the visitor's observation in these grades did teachers show a lack of thoughtful preparation for the day's lesson or a lack of resourcefulness in its presentation. In some classrooms, maps and other materials were freely used, and no tendency was noted to follow strictly or narrowly the letter of the lesson as printed in the textbook. Resulting from such freedom the pupils were quite generally alive and responsible — sometimes enthusiastically so.

The work in history appears in less satisfactory condition in grades 5 and 6 of most schools than in the grammar grades. Tendencies to narrowness of view on the part of teachers were here and

there noted. There was a manifest disposition in some instances to follow the lines of least resistance. A common procedure is to have the pupils read two or three pages from the elementary textbook, the exercise sometimes ending in that way, but oftener followed by a few perfunctory questions that are perfunctorily answered by the pupils. The teaching rarely struck fire; interest was at low ebb. Pupils frequently recited in a memoriter way. Interesting sidelights on historical incidents and personages presented by the teacher were quite infrequent. Lack of range in reading and a consequent lack of ability to illuminate history was often apparent. Opportunities to stimulate interest and effort on the part of pupils were thereby lost.

Plans already under way will probably result in a more definite organization of the work in history in the fifth and sixth grades. Provision for supervision that will prove effective in indicating to teachers desirable lines of reading, that will suggest stimulating procedures in conducting classes, and that will result more surely in imparting to pupils in the history classes the kind of information that will supply the motive for going afield in their reading, will make for betterment in the history classes of these grades. In this connection it may be remarked that a skilled and inspiring supervisor of work in the intermediate and grammar grades would be helpful in accomplishing larger results.

Elementary Drawing and Industrial Arts

The drawing teacher prepares outlines for the elementary grade room teachers every two months. These are specific and helpful and contribute much to the effectiveness of the work. The outlines include considerable subject matter as well as directions for carrying to completion certain typical projects.

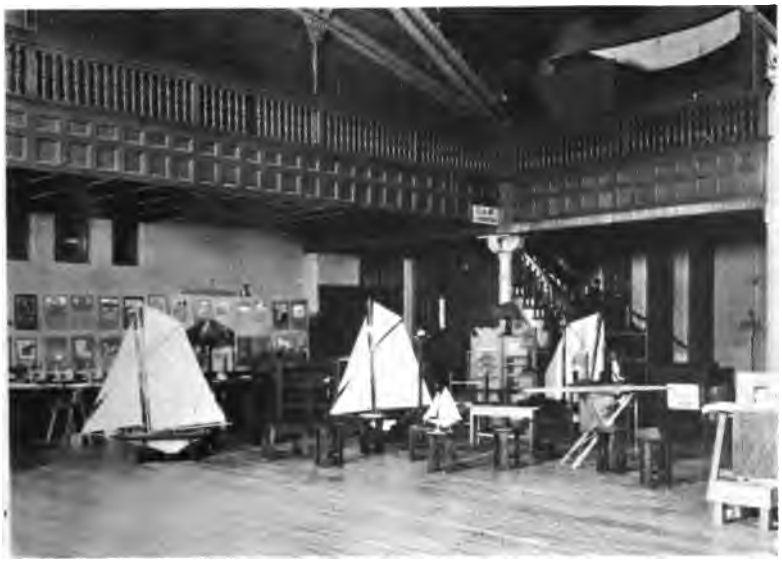
The supervisor of manual training prepares mimeographed patterns for the toys made by the pupils in grades 4 and 5. Subject matter in this work is almost totally lacking.

Partial differentiation takes place in grade 4, where the boys are taught cardboard and thin wood construction; complete differentiation in grade 6, when the boys are sent to the shop for bench work in wood.

Equipment is sufficient to do the work as it is at present planned. It will need to be increased from time to time as the work develops. The equipment and supplies were well taken care of.

ANNUAL SCHOOL EXHIBIT IN STATE ARMORY

A partial view. Household arts, drawing and manual training



ANNUAL SCHOOL EXHIBIT IN STATE ARMORY

A partial view. Woodworking and manual arts

Grades 1 to 6

Three supervisors cooperating are responsible for the drawing and handwork carried on in the first six grades, that is, the supervisors of manual training, drawing and home economics, as follows: the drawing supervisor for art and construction work, the manual training supervisor for the cardboard and thin woodwork in grades 4 and 5 and for the benchwork in grade 6, and the home economics supervisor for sewing in grades 4, 5 and 6. The effectiveness of this organization is dependent largely upon the voluntary cooperation of the three departments which apparently are endeavoring to correlate their efforts.

The time devoted to the combined work in the grades is as follows: drawing and handwork in grades 1 to 3 inclusive, four 20-minute periods a week; drawing in grades 4 to 6 inclusive, three 30-minute periods a week; construction in grades 4 to 6 inclusive, one 45-minute period a week; sewing in grades 4 to 6 inclusive, one 45-minute period a week.

It has been the aim of the art work to acquaint the child with the relation between art and the industries and art and the home.

The course includes nature drawing, color study, illustration, constructive design, drawing from toys, costume design, picture study, lettering and industry study. Beginning with grade 4 special emphasis is placed on commercial design, interior decoration and industrial subject matter. There is a strong tendency in this toward *industry — art — construction work*. Picture study is taken care of largely in the language classes.

It is stated that the aim of this work is to acquaint the pupils in grades 4, 5 and 6 with an elementary appreciation of the industrial opportunities of the community rather than to develop in them any specific tool technic. In grade 4 the work is, however, limited to cardboard and thin wood (coping saw) and in grade 5 to thin wood, in grade 6 to thicker wood (bench work).

Sixth grade work is planned to teach the fundamental processes of the common woodworking tools. A course based on this idea is followed rather closely. After the pupil has attained a certain proficiency he is allowed greater freedom in the choice of projects. All the work up to the seventh grade is in two dimensions only, that is, there are no projects involving the fastening of pieces of stock together to form sides and ends as in box construction. Box construction is left for grade 7 to develop.

The Intermediate Grades

The time given to drawing, manual training and sewing in grades 7 and 8 is one hour for shop and one hour for drawing each week. The boys receive no instruction in *freehand* drawing. Their drawing is all mechanical, including the making of working drawings for shop projects. Some of these are made from perspective sketches. The text used employs first angle projection which is no longer used extensively in commercial practice. A new text is to be substituted.

In the seventh grade the boys are required to work to three dimensions and larger projects are undertaken such as bookracks, taborets, plant stands, the choice being left largely to the pupil. There are certain processes which the boys are required to embody in their projects, and related work which is taken up. Sketches are made by the pupils of all the projects which they make both in the sixth and in the seventh grades.

In grades 7 and 8 instruction in drawing, for the girls, is centered about the costume and the home. The home planning work includes an elementary study of materials, costs, architectural plans and color schemes as applied to the building of a bungalow. An attempt is made to correlate this work with civic interests and with the various departments in the school.

The course in manual training has two objectives, the limited development of tool technic and the acquisition of as wide a range of industrial information as possible. It is not intended to confine the handwork strictly to wood. It is a fact, however, that woodworking has been employed almost exclusively up to the present time. Some upholstering and a little cane work is carried on in connection with furniture making. The weakness in the courses is their apparent lack of educative subject matter. The finished product would seem in some instances to have been considered as an end in itself. This was most noticeable at the Cleveland Avenue School shop where the "finished model" is still held up before the pupils as the most important consideration in the instruction. This criticism applies with equal force to the work in thin wood in the lower grades. It is impossible to vitalize this work with industrial subject matter. Not being of sufficient worth to demand so much time in the school program there might well be some modifications in the work in manual arts.

Summary

In the elementary grades of the Niagara Falls schools, the subjects of instruction include the common branches and also several special subjects such as drawing and industrial arts, music and physical training, which are under the direction of special teachers and supervisors.

The supervisor of primary grades has given special study to the best methods in connection with the work in reading and has worked out the classroom procedure along excellent lines. This work has been modeled somewhat after the work in the primary grades in the city of Rochester. It is of interest to note that advantage has been taken of the best methods and devices that have been worked out in other localities.

In the teaching of English throughout the grades the teachers are rapidly catching the spirit that should permeate such teaching. In general, it was noted that the pupils in the various grades seemed to have gained the ability to write letters suited to their grade and age. In the upper grades of one school, pupils were found to be carrying on an actual correspondence with other pupils in distant parts of the country. While the work was not uniformly strong, the frequent conferences should result in the gradual development of the best methods throughout the school organization. Pupils should be given every opportunity to develop their own individuality. It would be well worth while for teachers to encourage pupils to cultivate the habit of clear thinking in all recitations in the elementary school. Oral expression throughout the elementary grades is receiving the attention which it justly deserves.

There was an unfortunate lack of library facilities at the time of the first visits. This has, however, been corrected through large recent purchases.

The work in arithmetic varied widely. There was much difference in the amount and nature of drill exercises used in the various classes and grades. In some instances inaccurate expressions written at the board passed without correction. Accuracy should be insisted upon. Pupils will not do any better work than the teacher accepts. It was observed that the instruction in arithmetic was too often unrelated to human interests. The pupils might well be given problems which meet some personal need or are closely related to some social interest. There was little attention given to the supervision of pupils' study.

The work in history is in process of readjustment. In the fifth and sixth grades, history is taught in the form of biography but has a distinctly minor place in the school curriculum. The work is

stronger in the seventh and eighth grades and is based on the state syllabus outlined for this work. Plans already under way will probably result in more definite organization of the work in history in the fifth and sixth grades.

One feature of the work in the elementary grades is noted in the beginning of manual work for both boys and girls in the fourth grade. In this grade the girls are given sewing and the boys are taught cardboard and thin wood construction. Complete differentiation takes place in the sixth grade where the boys are sent to the shop for woodwork. As this work develops, other equipment will be necessary.

One aim of the work in the grades is to acquaint the pupils with an elementary appreciation of the industrial opportunities of the community. In the higher grades the course in manual training has as its objective some development of tool technic and the acquisition of a wider range of industrial information.

There is an unusual spirit on the part of the entire elementary teaching staff in the schools of the city. The work could not be carried forward as is being done without every cooperation between teachers, principals and superintendent. As is noted elsewhere, the classroom work in many respects could be made more effective with more definite supervisory plans on the part of the elementary school principals. Helpful supervision and frequent meetings of the individual teachers in the various buildings for the discussion of classroom and instructional problems would make more effective the course of instruction.

The outstanding need at the present moment is the reorganization of the work of the higher grades, which can be properly done only with adequate school buildings and equipment for the type of work that should be offered in a progressive intermediate school program. The plans that are already under way, with the full approval of the board of education, will meet this situation and give Niagara Falls one of the best elementary and intermediate school organizations of any city of its class.

7

THE SCHOOL GROUP

During the past decade the average daily attendance in the elementary grades in Niagara Falls has increased over 82 per cent. This fact in itself presents a large problem not only in the matter of school accommodations but brings an equally heavy burden on the administrative officers and local school authorities in providing the necessary teaching and supervisory staff to insure the best service that can be rendered.

TABLE 8

Showing average daily attendance in Niagara Falls schools, 1910–20

Year	*Elementary Schools*	*High School*
1909–10	3161	512
1910–11	3334	532
1911–12	3552	551
1912–13	3716	566
1913–14	3821	546
1914–15	4328	685
1915–16	4523	712
1916–17	4958	663
1917–18	.....5914.....	
1918–19	5534	697
1919–20	5774	804
Percentage increase 1910–20....	82%	57%

During the past school year there was a registration in the entire school system in Niagara Falls of 7250. Of this number, 6391 or 88 per cent were registered in the elementary grades. In the city of Amsterdam during the same year 92 per cent of the pupils were enrolled in the elementary grades. In the city of Elmira, 78 per cent of the school enrolment during the past school year was found in the elementary grades.

In the four cities mentioned, the percentage of pupils in the elementary grades varies from 78 in Elmira to 92 in Amsterdam. In Utica and Niagara Falls the percentage of registration in the elementary grades was 87 and 88 respectively.

TABLE 9

Showing percentage of pupils in each school year of public school system in Amsterdam, Elmira, Niagara Falls and Utica

Per cent of pupils in	*Amsterdam*	*Elmira*	*Niagara Falls*	*Utica*
Elementary	92	78	88	87
Kindergarten	9	5	11	5
Grade 1	15	12	14	12
Grade 2	14	8	12	14
Grade 3	14	10	11	12
Grade 4	11	9	11	11
Grade 5	11	9	9	10
Grade 6	5	9	9	9
Grade 7	8	8	6	8
Grade 8	5	8	5	6
Secondary	8	22	12	13
First year	4	8	6	7
Second year	2	6	3	3
Third year	1	4	2	2
Fourth year	1	4	1	1

In the Niagara Falls school system, the number of boys is 3636 and the number of girls 3614. In the Elmira school system, the number of boys is 3294 and the number of girls 3269. In the public school system of the city of Utica the number of boys is 6196 and the number of girls 6259.

One may judge from the table given above, showing the percentage of pupils found in each grade, that the holding power of the school system on the boys and girls above the compulsory school age is greater in Elmira than in Niagara Falls and in Utica, and that in the city of Amsterdam the percentage of pupils leaving school above the compulsory school age is greater than in any of the three other cities mentioned in the table.

In the school system of Niagara Falls 334 pupils out of a registration of 7250 are 16 years of age or over. In the school system of Elmira, with a school population of 6563, 864 boys and girls are 16 years of age or older. In Elmira 13 per cent of the school registration is 16 years of age or over while in Niagara Falls only 4 per cent of the school population is 16 years of age or older.

TABLE 10

Number of pupils enrolled by ages in Niagara Falls and in Elmira

Age	*Niagara Falls*	*Elmira*
4 years	111	23
5 years	604	333
6 years	765	518
7 years	735	529
8 years	658	504
9 years	651	527
10 years	583	552
11 years	620	545
12 years	625	575
13 years	573	557
14 years	569	516
15 years	420	507
16 years	179	388
17 years	100	272
18 years	41	136
19 years	13	58
20 years	1	10
Total enrolment	7250	6563
Census	14 139	8923

It is of interest to note in the two cities mentioned that there is a much more rapid elimination of 16 and 17-year old pupils in the schools in Niagara Falls than in the schools in Elmira. In Niagara Falls the number of 14-year old pupils in the schools was 569; in Elmira the number was 516. The number of 15-year old pupils in Niagara Falls was 420 while the number in Elmira was 507. The difference is especially marked in the 16-year old and 17-year old groups. These two groups, respectively, in Niagara Falls numbering 179 and 100, while in Elmira the two groups number respectively 388 and 272. In other words, with a somewhat larger registration of 13-year old and 14-year old groups in Niagara Falls the city shows a very greatly reduced registration of the 16-year old and 17-year old groups as compared with the registration of these groups in the Elmira schools.

TABLE 11

Enrolment by age and grade in the Niagara Falls schools, 1919–20

GRADES	SEX	AGE																		TOTALS
		4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21 and over	
Kindergarten	M	57	256	66	3	1														383
	F	54	250	75	6															385
Elementary 1	M		46	265	167	56	4	2	0	2	0									542
	F		50	267	121	45	8	3	0	0	1									495
2	M		2	44	184	120	66	19	7	3	0									445
	F		0	45	157	127	34	19	3	4	2									391
3	M			0	40	112	99	63	43	19	12	5	0							393
	F			3	57	137	124	46	19	13	5	2	1							407
4	M					26	111	114	71	40	29	18	9							418
	F					31	128	82	67	47	29	16	4							404
5	M					1	37	92	91	60	26	29	7	0						343
	F					2	36	85	75	51	36	17	11	2						315
6	M						1	30	81	75	59	37	31	0						314
	F						3	23	90	97	51	43	15	0						322
7	M							2	37	73	52	46	18	2						230
	F							3	29	75	77	44	12	0						240
8	M								4	26	62	63	28	3						186
	F								3	35	73	50	16	1						178
Secondary 9	M									2	21	78	77	32	6	1				217
	F									2	29	80	71	41	5	3	1			232
10	M									1	2	11	30	21	16	3	3			87
	F										4	23	35	17	15	5				99
11	M										1	2	15	15	11	8	2			55
	F										2	5	26	29	22	8	1	1	1	94
12	M												5	5	2	2	3			17
	F												8	11	17	7	2			45
Higher 13	M														1					1
	F														4	2				6
14	M												1		1	2			1	5
	F																1			1
Total	M	57	304	375	394	316	318	322	334	301	264	289	221	78	37	16	8		2	3636
	F	54	300	390	341	342	333	261	286	324	309	280	199	101	63	25	5	1		3614

The distribution of pupils in the Niagara Falls schools by age and grade shows that 63 per cent of the pupils in the elementary grades are of normal age for the grade in which they are found; 11 per cent of the pupils are accelerated and 26 per cent are retarded. The largest per cent of pupils of normal age for their grade is found in the first grade, where 79 per cent of the pupils are of normal age. This percentage decreases in the second, third, fourth and fifth grades where it reaches 52 per cent. In the sixth grade there is a slight increase in the percentage of pupils of normal age and a still further increase in this percentage in the seventh grade and in the eighth, the percentages in these three grades being 54, 59 and 68.

The percentage of pupils retarded varies from 12 per cent in the first grade to 50 per cent in the fourth. The increase in this percentage is rapid from the first grade to the fourth, increasing from 12 per cent in the first to 19 in the second, 28 in the third, and 40 in the fourth. There is a slight decrease in the fifth and sixth grades, where the percentages are 36 and 37 respectively. The percentage of retarded pupils in the eighth grade is 13. It may further be observed that the percentage of accelerated pupils varies from 7 to 19 in the different grades. The lowest percentage of accelerated pupils is found in the fourth grade where this percentage is 7. This is also the grade, as already noted, in which the percentage of retarded pupils is the highest. In the eighth grade 19 per cent of the pupils are accelerated. This is the highest percentage found in any grade.

The fact that 68 per cent of the pupils are of normal age in the eighth grade and that only 13 per cent in the eighth grade are retarded must be due not so much to the school organization as to the fact that the mortality in this grade is unusually heavy, the percentage of pupils retained above the compulsory school age being quite small.

TABLE 12

Percentage of pupils accelerated, normal, and retarded in each grade in Niagara Falls and Elmira

	Elmira			Niagara Falls		
Grade	*Accelerated*	*Normal*	*Retarded*	*Accelerated*	*Normal*	*Retarded*
First	16	71	13	9	79	12
Second	16	63	21	11	70	19
Third	11	60	29	12	60	28
Fourth	11	56	33	7	53	40
Fifth	13	54	33	12	52	36
Sixth	12	56	32	9	54	37
Seventh	13	53	34	15	59	26
Eighth	17	58	25	19	68	13
Average	14	59	27	11	63	26

In the elementary schools of Elmira 14 per cent of the pupils are accelerated, 59 per cent normal, and 27 per cent retarded in the age-grade distribution. As has already been noted, in the elementary schools of Niagara Falls 11 per cent are accelerated, 63 per cent normal and 26 retarded in the age-grade distribution of the elementary school pupils.

The percentages given in the distribution of the pupils in the eighth grade, which would seem to indicate a much smaller percentage of retarded pupils in Niagara Falls than in Elmira, with a larger per cent of normal age, in the Niagara Falls schools, must be interpreted in connection with the table showing the number of pupils of each age (table 10) and the percentage distribution of pupils as shown in table 9. Apparently, therefore, the large number of pupils

of normal age in the eighth grade in Niagara Falls and the small percentage of retarded pupils as compared with similar conditions in Elmira must be due in part to the greater mortality of pupils above the compulsory school age in Niagara Falls.

The greater flexibility which will be brought about in the Niagara Falls school system through the development of the intermediate schools, plans for which are already under way, with the somewhat greater diversity in courses of instruction to be offered, will in part meet the problem of the proper school work which should be developed for the pupils of the higher grades. At the present time the congestion in the two old grammar schools, in which the work in these grades is now being carried forward, notwithstanding every effort that is being made by the teachers, principals and school authorities, can not be of such a character as to appeal strongly to pupils of these grades, especially to those who are attracted in any way by the industrial opportunities of the community. These conditions will be greatly changed through the development of the new program which the board of education already has under way.

Summary

The attendance in the elementary grades has increased in Niagara Falls over 82 per cent in the last 10 years. This fact indicates a large problem not only in providing adequate school accommodations but also in suiting the school work to the pupils' needs, especially to those of the adolescent age.

The industrial opportunities of the city present financial attractions which result in a very considerable elimination of the pupils in the higher grades. As compared with Elmira, which was studied at the same time, Niagara Falls shows a greatly reduced registration of the 16 and 17-year old groups.

The greater flexibility which will be brought about in the Niagara Falls system through the development of the intermediate schools, with somewhat greater diversity in the courses of instruction, will not only relieve the congestion in the higher grades of the grammar schools but will make a stronger appeal to the special interests of the pupils of these grades.

The new junior high school program will be the very best plan which the city can offer to meet this need for further educational opportunities for the pupils of the higher grades.

8

HIGH SCHOOL

The high school is in some respects the most distinctive feature of the American public school system. No phase of our educational development during the past generation has been more marked than that of the secondary school. At times in the city and in the village community this has been at the expense of the elementary grades. The local pride in the high school may be observed oftentimes in the building which is erected for high school purposes. Niagara Falls has endeavored to make provision for the increasing demands in both elementary and secondary work. It is not apparent that the needs of one field have overbalanced the other.

The Niagara Falls High School occupies a large and attractive site near the geographical center of the city. The present high school plant was erected in 1903 and at that time was one of the model high school buildings of the State. The building is still in excellent condition, its inadequacy being due to the rapid increase in high school population, and to the greatly increased demands on the secondary field.

The total school registration in Niagara Falls has increased from 6288 in 1916 to 8313 in 1920. During this same period the total high school registration has increased from 915 to 965. The percentage of high school registration to the total school enrolment in 1916 was 14.5 while in 1920 it was only 11.5. It is not the purpose at this point to enter into an analysis of the decline in the percentage of high school registration to the total school enrolment during this five-year period. It may be remarked, however, that during the period of the World War there was a noted decrease in high school registration in our commercial and industrial centers, due to general war conditions with which every one is familiar. There was the appeal from industrial establishments due to the unusual wages offered for services of various kinds. It is reasonable to hold that with the return of normal conditions the increase in the high school registration will be marked.

Not only does the elementary school attendance show a much greater increase during the past decade than is shown in the high school attendance, but it may further be observed that while the high school attendance in 1910 was 16 per cent of the attendance

in the elementary grades, in 1920 the high school attendance was only 14 per cent of the average daily attendance in the elementary grades.

The program of supervision and the courses of study that have been mapped out for the schools serve admirably the needs through the sixth year. Not until a reorganized program has been developed for the higher grades and articulated more closely with the high school will the school authorities be able to meet the needs of the community for the boys and girls of adolescent age. This plan has been outlined elseweher and need not be emphasized at this point beyond calling attention to the difference in the point of view of the intermediate school program from the strictly formal grade schedules heretofore followed for the pupils in the seventh and eighth grades of the public school system.

The system of forms and records in use in a school organization should serve a single purpose, that of keeping the teachers, principals and parents fully advised as to the progress that is being made by the pupils in the school work, and also give complete information through the same means as to manner in which the administrative organization is functioning.

On entering high school the pupil fills out what is called the " registration card."

REGISTRATION CARD

Full name (surname first).....

Grade.....Room..... Day Month Year

Age.....Years.....Months.....Days. Date of birth.....

Parent or guardian .....

Address of parent or guardian.....

Address { If resident student, no. and st. .....
If nonresident, town.....District no. .....

Parent's occupation.....No. of telephone.....

If " Regents preliminary " completed, where and when? .....

I wish to prepare for.....

HIGH SCHOOL, NIAGARA FALLS, N. Y.,.....192....

There is no special plan for guiding or directing the activities of the new pupils who enter high school for the first time. It is true that high school registration and courses of study are discussed with the eighth grade pupils by principals and class teachers in the ele-

ONE OF THE COMMERCIAL ROOMS IN THE HIGH SCHOOL

THE BIOLOGY CLASSROOM AND LABORATORY IN THE HIGH SCHOOL

mentary schools. This does not, however, satisfactorily bridge the gap between the elementary grades and the high school, as is fully appreciated by the local school authorities. It may very properly be held that with some plan of group organization whereby the first year high school pupils might be divided into sections of fifteen to twenty pupils each with a faculty adviser responsible for each group, the large mortality in the high school might be greatly decreased and the pupils given wise and helpful assistance in determining the objectives of their work.

The only record of the pupils' work in the elementary grades that carries over into high school is the report of the "preliminary" examinations. With the reorganization of the work in the higher grades and the early development of the intermediate school plan the "break" at the end of the eighth year will be entirely eliminated, and the new course of study made more flexible in terms of fundamental community activities.

The report of the pupils' progress is made to the parent three times during each term, at the end of the fifth, tenth and twentieth weeks. The report must be signed by the parent and returned to the principal.

Pupil's Report Card
NIAGARA FALLS HIGH SCHOOL
NIAGARA FALLS, N. Y.

FALL
SPRING TERM.....19....

REPORT OF .....

GRADE ..... COURSE ..... COUNTS .....

Subjects	Class Standings 5th Week	10th Week	20th Week	Examination
English	....	....	....	....
Latin	....	....	....	....
Greek	....	....	....	....
German	....	....	....	....
French	....	....	....	....
Mathematics	....	....	....	....
.....	....	....	....	....
.....	....	....	....	....
History	....	....	....	....
.....	....	....	....	....
Science	....	....	....	....
.....	....	....	....	....
.....	....	....	....	....
Commercial subjects	....	....	....	....
.....	....	....	....	....
.....	....	....	....	....
.....	....	....	....	....
Drawing	....	....	....	....
Domestic arts	....	....	....	....
Manual arts	....	....	....	....
Elocution	....	....	....	....
Music	....	....	....	....
Physical training	....	....	....	....
Days absent	....	....	....	....
Times tardy	....	....	....	....

0-75 Failure 75-90 Passing 80-90 Satisfactory 90-100 Excellent (honor)

Study time equal to daily recitation time is necessary for *passing work*, — at least one and one-half hours outside the school session.

Parent's Signature .....

Principal

The average pupil registration per teacher in the Niagara Falls High School has remained nearly static during the past 5 years. The number of teachers in the high school has increased during the period from 1916–1920 from 33 to 39. The average number of pupils to a teacher has decreased during this period from 27 to 24. These figures show that the school is not overorganized and that the number of pupils per teacher is somewhat larger than is found in many high schools.

The instruction in the high school may be grouped under the six courses which are somewhat interrelated. The content of these courses may be generally outlined as follows:

1 The college course gives preparation for college entrance in the usual courses leading to the B. A. degree. To complete this course, the pupils must take, among other subjects, either three years of Latin and three years of a second foreign language or four years of Latin and two years of a second foreign language. Additional languages may be elected.

2 The scientific course prepares for entrance to the scientific courses in colleges or to scientific and technical schools. To complete this course, the pupil must have, among other subjects, at least three years of one foreign language. He may elect two years of a second foreign language, beginning this in either the second or third year of his course. By a proper grouping of subjects in mathematics, in science and in shopwork, he may earn through this course the college entrance diploma in science or in engineering.

3 The normal (teacher-training) course prepares for entrance to the normal schools of this State.

4 The household arts course, including homemaking subjects, provides a general course for girls, with a wide range of choice in electives.

5 The business course provides training in business subjects with some opportunity for choice in languages and in other subjects.

6 The manual arts course is a practical shop course for boys, including work in wood and in sheet metal with an opportunity for a choice in languages, sciences and commercial subjects.

In the normal and manual arts or vocational courses, the completion of one four-year sequence, one three-year sequence and one two-year sequence of studies is necessary for graduation.

Table 13 indicates for a five-year period the registration in each of these courses and is interesting in that it shows in part the direction toward which the school is moving. For the school year 1920, it may be noted that the college entrance course and the scientific

course has enrolled nearly one-half of the high school population. The business course has the largest registration but there has not been any appreciable growth in this course, whereas there has been a normal increase of pupils each year registered in the college course.

TABLE 13

High school registration by courses

	1916	*1917*	*1918*	*1919*	*1920*
College course	160	180	190	180	206
Scientific course	170	176	180	197	195
Normal course	85	75	42	32	56
Household arts course	30	35	30	37	56
Business course	330	272	265	298	322
Manual arts course	50	69	60	75	78
Total	825	807	767	819	913

The normal, the household arts and the manual arts courses have attracted relatively a small proportion of the high school student body. It may be said in connection with this that possibly one reason for the small number of pupils electing these courses has been the lack of suitable equipment together with inadequate space in the high school needed in these courses. The normal or teacher-training course has continued to attract a small number of pupils. This is due undoubtedly in part to the general economic condition and the salaries paid in the teaching service. It is to be hoped that this condition will improve.

The general impressions gained from a study of the reports of the specialists who were engaged in the survey of the Niagara Falls High School indicate that in their judgment the instruction in individual subjects is generally good and in some instances is superior. Certain limitations upon the effectiveness of teaching, caused by crowded conditions or by a lack of material equipment, exist and these may be eliminated only when these conditions are removed or this needed equipment is provided.

The Instruction as Observed

In endeavoring to judge the quality of instruction in the high school, observations in the various departments were made by specialists who visited the classrooms and who have prepared the following summaries of the work:

English

The organization of the English work in the high school is in many respects admirable. The spirit in the school is strong, and the attitude of the pupils toward the subject of English is commendable.

There are approximately 900 pupils in the school. Five teachers (four women and one man) give their entire time to teaching English,

each teacher having five classes and at least one free period. Three of these teachers have charge of study halls one period in the day, and the other two teachers have each an extra free period. For this additional free period one teacher has charge of the school paper, and the other acts as counselor to the pupils who have just entered the school. Three teachers of other subjects have, each, one class in first year English, and a fourth teacher has two such classes. Here is enough work for one additional English teacher.

The average number of pupils per teacher-period is 26.5, which is a reasonable number. The classes range in size from 16 to 34. The average total enrolment of the five regular teachers is 132, and the range is from 118 to 147. Some improvement might be made if each teacher's actual enrolment were more nearly equal to the average. This would probably involve difficulties of administration.

Of the five regular English teachers, two are college graduates and three are normal school graduates. Four have had summer school work at various times, and a fifth holds a master's degree. One normal school graduate is about to complete her study for a degree at Columbia University. Their years of experience in high school work range from 5 to 28. The average number of years these teachers have taught in Niagara Falls is nearly 9. This record shows that they have a serious interest in the professional side of their work, that they have had sufficient practical experience in the classroom, and that their salaries are attractive enough to insure reasonable permanency of tenure.

The problem of articulating the work of the first year in the high school and the eighth grade does not seem to have been touched very much as yet. A beginning could well be made by having the teachers in the high school and the grades exchange visits for the purpose of comparing problems. Special teachers of reading and elocution, as well as all teachers of oral expression in the elementary schools and the high school, should have frequent conferences whose aim is to eliminate the gap between these interactional parts of the school system. Each group of teachers should be conversant with the aims and methods of the other. With the development of the junior high school program real and effective articulation will be secured.

An effective bit of work is being done within the high school in the matter of correlating the English and civics. A junior chamber of commerce has been organized to which all pupils entering from the elementary schools belong. A practical application of the theory learned in the civics class is made in the junior chamber of commerce. Much of the information so gathered is used in the oral and

especially in the written composition of the first year. Definite attempts are made also to correlate the oral and written work in English in the upper years with other school studies and with life. This correlation is shown chiefly in oral and written compositions — history, science, and the industries of the community furnishing subjects. Correlation is again secured in the choice of books for home reading. Here, likewise, books selected by the pupils are very often those concerned with ancient and contemporaneous history, science, travel and biography. These things indicate a healthy interest on the part of both pupils and teacher in the affairs of life.

The library contains about 2000 volumes of varied types. Approximately 75 per cent of these are of general interest from the standpoint of English and comprise fiction, history of a popular character, biography, essays and poetry. This library is in charge of a practical librarian, trained in the school of experience. The library itself is much too small for a school of 900 pupils, and the room in which it is placed is entirely inadequate from the point of size and equipment. A library room in a school of from 800 to 1000 pupils should seat from 50 to 80 pupils at a time and should be capable of shelving from 5000 to 8000 volumes. It should be the most attractive room in the building, well lighted, and equipped with low shelving. There should be tables seating from six to eight pupils, pictures, a bulletin board for posting illustrative materials and reading lists, and exhibit cases. It should have a "vertical file" for holding clippings and pamphlets arranged in alphabetic order, and a set of drawers for keeping lantern slides, post cards, maps, victrola records and all other accessories necessary for the most effective cooperation between the library and the departments of Latin, English, history and biology, and all other high school activities. It should be the depository of all the illustrative material belonging to the school.

In order to secure the cooperation mentioned above, the librarian should be in close touch with the teachers of all subjects; she should know what matters are to be taken up in various departments next week or next month so that she may select and gather in one place for the use of the teacher and pupils such books, pamphlets, pictures and objects as will aid constructively in the instruction. Each teacher and pupil should have such a deep interest in the library that he will feel it a privilege to furnish for the use of the pupils any clippings, pamphlets, post cards or other materials which he may have. The library should be the most cherished spot in all the school.

Despite adverse conditions in Niagara Falls, however, the library is doing some service in the school, as is manifested by the interest

with which pupils borrow books. During September 1919, 2900 volumes and in November 1919, 2447 volumes were circulated. This is an indication of a healthy condition and every effort should be made to capitalize it for the best interests of the work not only in English but in every other subject.

Niagara Falls High School is approved for certification of work in literature. This means that the work the pupils do in literature is not subject to examination but is accepted by the State Department of Education on the certificate of the principal. Such a privilege is accorded only to schools having satisfactory teaching conditions. The amount of supplementary reading done is an important factor. In Niagara Falls the pupils are inclined to read more than the minimum number of eight books a year, and the school wisely recognizes this extra reading by granting additional credit in literature. The teachers seem to be building up a love for literature that is worthy of recognition.

There are several other features in the high school that are worth noting. The teacher of elocution handles one class in first year English. The rest of her time is devoted to preparing pupils to take part in school assemblies and dramatic performances. Enrolment in these classes is voluntary. Some very helpful assistance could be obtained from this teacher if she were given time to work with pupils who have speech defects or who otherwise need special attention. Little time seems to be given to debating. This part of the work should be more seriously considered from the standpoint of its value to oral expression.

The school paper, "The Chronicle," is published biweekly. It takes the form of a newspaper devoted to the interests of the school community. One of the teachers in the English group acts as faculty adviser, and the paper serves as an outlet for composition work done in connection with the regular classes. Each issue is subsidized by the board of education to the amount of $45 so that it is possible to have the advertising reduced to a minimum and to sell the paper for 2 cents a copy.

Pupils in the commercial course take fourth year English in a class by themselves conducted by the commercial teacher. The approach is largely from the point of business practice, little time being given to the study of literature. There is thus a tendency to narrow the work done by these pupils. If they do not have any other English instruction at this time, their work should be as varied as that of the other pupils, with the express idea of fitting the subject matter to their particular needs. Oral expression, business correspondence,

spelling and the acquiring of a business vocabulary should each be a part of the instruction. The reading of literature, however, should not be neglected. Books and articles reflecting the spirit of the present, those that have a bearing upon business, and those that treat of the problems and activities of life ought to be made a part of this year's reading. Intermingled with these should be some standard books, well chosen and sanely taught, designed to be of assistance in building character. It is a question whether this work can not be handled better by a teacher of English than by a teacher of business practice. The outlook of such a teacher, at least, is apt to be broader.

For the past few years a class has entered the high school from the grades in January made up largely of pupils who have failed the preceding June or of pupils who are overage. Occasionally a bright pupil has found himself in this group. Into this class of pupils in the high school have gravitated some boys and girls who failed in their work there and some who have covered two terms' work in one or who have entered the school at an unfortunate period. These classes go through the school much like the trough of a wave, the crest of which is high and broad. It is to be noted, however, that the class graduating from the Cleveland Avenue School in January 1920 contains only 50 per cent, out of a class of 24 pupils, of pupils who are repeating the eighth grade or who are overage. Thus twelve specially bright pupils, selected by examination, will enter at this time. Hereafter it is expected that there will not be a January class in that school. The effect of these classes seems to be most marked in English, as the pupils are kept together for the most part in a separate section.

There are certain evidences of a good recitation, most of which should appear in any one period. A class in which a good recitation is going on should be orderly and interested and should give one the impression that its members have made a careful, intelligent preparation of the day's work. The pupils should show that they are getting a clear conception of the subject under sympathetic, helpful, inspiring guidance. The teacher must show that she is conversant with the lesson, that she has the ability to correlate the work of the period with the affairs of life, and that her aim, suited to the needs and ability of her pupils, bears a proper relation to those that have preceded. The topics and questions based on them ought to be presented in right sequence. The recitation must be adapted to the age and state of development of the pupils. Evidences of mutual confidence and helpfulness between teacher and pupils should appear. The assignment of work for the succeeding period ought to be definite

and such helps as are required should be definitely given. The motivation here and at the other points in the lesson must be clear and sure. Above all, the lesson should close with the interest of the pupils keen.

In most of the recitations observed the classes were orderly and interested and gave assurance that a painstaking preparation of the day's work had been made. In several instances pupils showed they were not getting a clear understanding of the subject being discussed. This was very noticeable in one class where the diagram was being used as a means of teaching points in grammar. Helpful, sympathetic guidance was lacking with the inevitable result that the pupils failed to profit by the recitation. Other indications of the same fault appeared in other classes where pupils gave no proof that they had a grasp of the principles of grammar under discussion. In all cases regular teachers of English showed that they had made thorough, personal preparation of the lessons and that they had the ability, even if they did not make the most of their opportunities at all times, to relate their teaching to life. Several recitations were observed in which there was some skilful questioning based upon a well-defined aim and upon topics carefully chosen.

Teachers ought to take account of stock frequently to assure themselves that they are not teaching beyond the comprehension of their pupils. No instances of this type of teaching were seen in Niagara Falls. Unfortunately, however, the teaching frequently lacked the incentive and the inspiration that makes for efficiency. There were classes, nevertheless, where such inspiration and incentive were present, as for instance in one period when the pupils were studying some modern essays. There the pupils and not the teacher were doing the work with consequent success. Needless to say, interest prevailed. In too many cases, however, the teacher did practically all the work with the result that the pupils gained little except an indifferent amount of information. Reading and study of literature demands a maximum amount of activity from the members of a class. Although a liking for literature seemed to prevail in the school, it was quite clear that for the most part this came about as a result of the supplementary reading rather than the class work. In too many cases the broader, underlying principles, the ideals, were not emphasized; on the contrary, the discussions were too analytical. In one period, nevertheless, an excellent treatment of Gray's Elegy was observed where the teacher had grasped the spirit and was transmitting it to her class by effective teaching.

Little attention appeared to be given to making definite assignments for the next day's recitation or to motivating the work in composition. Only one case was noted where the assignment was definite and sufficiently well formulated to be of dynamic value. More often the assignment was made almost as an afterthought, and in one period only the last two minutes were given to it. It is beginning to be realized that an assignment of work with effective incentives or one lacking such stimuli means a recitation the next day with consequent profit or loss to the class. Composition, oral and written, offers the best chance for proper motives. Presence of an adequate motive makes school work full of purpose. Motives apparently simple to teachers are of immense value to pupils. They help the pupil to function properly in the school community. There are various types of such motives. Today the most compelling is the social. In a community of the character of that in Niagara Falls there are abundant opportunities for the utilization of the social motives in composition. Very little evidence appeared that these motives were being used in the oral and written work. Better results must follow where pupils are taught to recognize problems and to respond to the incentives demanded in their solution.

In conclusion it should be reiterated that the organization of the work in many respects, as far as individual teachers are concerned, is to be commended. Better results might logically be expected if all the classes were taught by teachers especially trained in English. The teaching of the subject in general may suffer, likewise, because these teachers have no leader who is responsible to the principal of the school for their work as a group. The library exists under adverse conditions. Better things may be looked for, undoubtedly, when it is placed in a suitable room, and made adequate for the important service it should render the school. The instruction in English as observed was somewhat uneven. This is not unexpected where part of the instruction is given by teachers whose major interest is in other subjects. Where the instruction was given by teachers who have specialized in English, the results were more effective although not all to be desired. On the whole, the teaching was directed toward securing power to meet situations independently rather than toward accumulating a fund of information.

Latin

The information presented in the following paragraphs was obtained through visitation of various classes and through conferences with the teachers.

Observations were made in ten classes as follows:

In Latin 1-B	4 classes
In Latin 1-A	1 class
In Latin 2-B	2 classes
In Latin 2-A	1 class
In Latin 3	1 class
In Latin 4	1 class

There are four teachers in the staff engaged in giving instruction in Latin. Two of these devote their entire time to such work, instructing five classes each daily. The other two have two classes each in first year Latin, devoting the remainder of their time to classes in other subjects.

Of the four teachers included in the list, one had the B. A. degree (Latin major) obtained at Cornell University, one had the degree of Pd.B. from the New York State Teachers College, and two are graduates of the Buffalo State Normal School. One had had four summer school courses at Cornell, and the other three have had one such course each, two at Columbia and one at Cornell. The maximum number of years' experience in teaching represented in the list is 29, the minimum number 20, the average experience for the four is 24 years. One of the group had 3 years' experience before coming to Niagara Falls; the entire experience of all the others has been in this system. One of the four had taught Latin here for 27 years, the others respectively 20, 10 and 5 years each.

The present relative status of Latin in the group of foreign languages represented in the high school curriculum is shown in table 14.

TABLE 14

Relative status of the various foreign languages

YEAR	High school enrolment	Enrolment in Latin	Enrolment in French	Enrolment in Spanish	Enrolment in German
1.....	449	143	92	71	..
2.....	186	104	76	12	..
3.....	149	58	23	..	17
4.....	62	17	..	..	..
Total..	846	322	191	83	17

From table 14 it will be noted that Latin is the preferred foreign language among a majority of the pupils. Considerably more than half of the total enrolment in the various foreign languages is in Latin. Of the total high school enrolment Latin shows a percentage of 38+; French, 20+; Spanish, 10; German, 2+. In view of the large commercial and industrial interests in Niagara Falls and

the extent to which such interests are represented in the technical courses pursued by pupils in the high school, this showing is considered a favorable index of the place that Latin holds in public esteem.

The status of Latin as a preferred subject of study affords a presumption of good teaching. In the more advanced classes, this presumption is warranted by the facts. All the second, third and fourth year classes are taught by the two women of the staff who are best qualified by professional education and by experience for this work. In a better proportion than heretofore pupils are making good in their classes in Latin 2, 3 and 4. In point of modern technic there was much to commend in the instruction of the second year classes. The spirit of the new two-year syllabus was well reflected in the teaching of these classes, and its influence as a stimulus in arousing interest and in getting momentum in the classroom, was apparent. Good leadership was also noted in the conduct of these classes.

Pupils in the third and the fourth year classes were reading their texts with understanding and with commendable appreciation of literary values. Collateral matters of the biographical and historical type were not neglected in the classes in Cicero. In the study of Vergil, the effort to interpret the spirit of the poem by a regard for the graces of English expression was noticeable. Here, too, collateral topics — mythology, allusion, geographic features — important to a genuine understanding of the poem, were receiving due attention. It is possible that in the effort to treat collateral topics adequately in the classes in Cicero and Vergil, too great a proportion of the recitation periods are sometimes consumed, but on this point our information is incomplete.

In general, these classes are making good progress. In conducting the recitations in Cicero and Vergil, the teacher showed insight, range of attainment and a creditable variety in presenting the lessons.

Observations were made in all five of the classes in first year Latin. In *one* of the five, impressions obtained were distinctly favorable. In the other four classes, many of the pupils appeared indifferent and most of them were quite unresponsive to the teachers' efforts. In general the pupils did not seem to be well prepared on the assignments and in consequence the recitations proceeded slowly. In view of the time in the term at which visitation was made (the ninth week), the classes appeared behind standard in their accomplishment to date. The observer's impressions of these classes point to the need of better technic in teaching, more spirited procedure with consequent gain in momentum in class activities.

In this connection it may be observed that the work in Latin is not strictly departmental nor is there any departmental head. Except as teachers may confer informally from time to time, there is no way whereby definite understandings may be had regarding the ground to be covered from month to month, nor regarding the manner in which the work must be done. Standard tests are not applied at different stages of progress in the work of the first year, nor is there a common understanding as to desirable goals of achievement from term to term. There is no one who exercises authority in unifying and standardizing effort. The designation of a department head would be distinctly in the direction of progress. It would seem desirable, too, to place the work in first year Latin in the hands of *one* teacher, who would assume all responsibility for instructing all the classes. Such a teacher should have reputable scholarship, a sense of humor, excellent qualities of leadership, expertness in modern technic and the enthusiasm that insures interest in the classroom.

History

In the Niagara Falls High School, the work in history and in related subjects is in charge of four teachers. Their training and experience indicate a satisfactory equipment for the work they are doing. Three of them are college graduates, two of whom have had postgraduate courses in political and social science; the fourth is a normal school graduate with special training at Columbia. The average general experience of these teachers is 20 years, of which 5 years have been given in Niagara Falls.

The allotment of their work, as shown by the schedule of studies, indicates that each of these teachers usually has five recitation periods and two vacant periods each school day. The classes generally number from 20 to 25, but in several cases there is a class registration of over 40 pupils. Where such registration exists a distribution of pupils is desirable.

The present program provides for classes in the following subjects: ancient history, modern history 1 and 2, American history, community civics, economics and commercial geography. The plan whereby an experienced teacher of history teaches classes in commercial geography is to be commended for she can bring to her instruction the elements of social and industrial history that are so closely related to commercial development.

The work in this field is in a transition stage. It is in the process of adjustment from the old to the new syllabus in history. When this readjustment is made it may be desirable to drop economics as

a separate subject of study and to organize the sections in American history so that pupils pursuing the commercial and manual arts courses shall be in one section. The flexibility of the proposed syllabus in American history will permit these pupils to emphasize the social, economic and industrial phases of the syllabus.

The equipment in maps and charts is fairly complete, but in a school of this size it should be possible to fit up the rooms used for the department of history so that they will in a measure reflect the spirit of the work. Good pictures, models, reference books, collections of historical material would create an historic atmosphere and should stimulate and inspire pupils with a love for a most interesting and vital part of their education.

The class recitations ranged from fair to excellent. Where pupils were expected to recite topically, to express individual judgments and to use material other than the text as a basis for these judgments, the results were at once evident to an observer. The work progressed spiritedly and the class was interested. But where there was a memoriter reproduction of the text with little discussion of the facts presented, the class reaction was distinctly poor. Fortunately the great majority of the recitations observed were of the first type.

Mathematics

This report is based upon the observation of the classroom work of the five teachers of mathematics in the high school.

There are four women and one man in the department. All but one are college graduates and all are seasoned teachers of several years' experience. One is a normal school graduate only but she has done considerable summer school work in mathematics. She seems ambitious to keep abreast with the times in her work of teaching. One or two others have done summer school work since graduation from college where each specialized in mathematics.

While the one man in the department is the nominal head, there is no recognized head to the department.

There are six periods daily in the school program and the work is so arranged that each teacher shall have generally one free period each day. Classes are small in size, ranging from about 15 to 25, so that the teacher can keep in touch with the needs of the individual pupils and all can take active part in each recitation. This is a very desirable feature.

There are no department meetings in mathematics. Department meetings at which the best methods of teaching the various topics and subjects are freely discussed would be helpful. This should

have a tendency to make the teaching more uniform and hence any necessary transfer of pupils from one division to another more easy. In some of the classes in algebra certain procedures were attacked and forbidden that were tolerated in other classes. This clearing house of ideas would eliminate conditions of this sort.

There should be opportunity frequently to visit one another's class, to get ideas and to make friendly suggestions. This is not being done.

Teachers do not seem to have available in the school library books on the teaching of mathematics and mathematics magazines. There should be a more intimate knowledge of the syllabus requirements in mathematics on the part of some of the teachers. This might well afford material for discussions at the department meetings.

If algebra is to be started in the eighth grade, as it is in the elementary schools in this system, there should be frequent conferences between the teachers of first year algebra in the high school and the eighth grade teachers. At these conferences the work of the eighth grade should be mapped out and suggestions made as to the best methods for teaching the subject. This is the only way that such a course can be intelligently planned and successfully carried out. Needless to say, this cooperation should be open, cordial and friendly and reciprocally helpful. Here again we see the desirability of a recognized head to the department who could have general supervision over these conferences and could make frequent visits to the classes concerned to see how the work is being carried out.

In some of the recitations observed there was a tendency on the part of the teacher to give too much help to the pupil and assume the responsibility at the first approach of a difficulty where help was not needed. Not enough of the work and explaining was done by the pupil. While the questioning on the part of the teachers was generally good, occasionally it did not seem to provoke much thought on the part of the pupil.

All the rooms were well supplied with good blackboards and in some of the classes it would be desirous to make more extensive use of them. In classes like first year algebra, principles are mastered only by repeated application in problems and the blackboard affords a good means of conducting this drill. Greater emphasis should be placed upon accuracy and checks in algebra and should generally be required in all home work. Home work too should receive more careful consideration to be sure that it has been done by the pupils and mastered by them.

Rooms in which geometry classes are being conducted should be well supplied with blackboard compasses and rulers. Pupils should

not be allowed to recite at their seats but should pass to the board and use the pointer when explaining. All drawings should be made with ruler and compass and should be reasonably accurate.

Recitations in mathematics in general, in geometry in particular, should be conducted on the analytic or inductive method, leading the pupil to greater confidence in his ability and instilling in him the spirit of discovering facts for himself rather than making it memoriter work.

Biologic Science

Two teachers give instruction in the year course in biology. They are both college-bred. One was graduated from Syracuse University which she entered after graduation from the Cortland Normal School. She has also taken summer courses in Cornell University. She has taught biology in this school for the past 10 years. The other teacher was graduated from the William Smith College in Geneva. She came to this school to teach biology two years ago after four years of experience in teaching the subject in a smaller school.

Instruction is given to 185 pupils in eight sections. Each section receives seven periods of instruction weekly, at least two of which are given in laboratory work. The teachers have rendered and are rendering good service. They are industrious and capable and would undoubtedly make their instruction still more effective if better facilities for work were provided. Charts, microscopes, cases for specimens and notebooks are provided. The rooms used are given up to teachers of other subjects in the evening school, thus making it impossible to leave any incompleted experimental work on the tables or desks from day to day. The laboratory tables are not modern, and the facilities for the study and care of living animals are not adequate. Accordingly it is suggested that as soon as possible more room be provided so that the rooms assigned for biology classes may be devoted wholly to their interest, that modern laboratory tables be purchased, that aquariums, cages and a miniature greenhouse be furnished and that more common things, such as samples of various kinds of seeds put up in small bottles and of different kinds of dry fruits, be placed in the museum. If these things are made available, the teachers will be able to create greater interest in the subject and in the minds of their pupils and correspondingly better educational results will be secured.

In addition to the regular full course in biology, instruction is given during the spring term by the teachers of general science in the part of this course devoted to life study. In regard to this work it may

be said that the teachers labor under the same handicaps that the teachers of biology do.

This part of the general science course is taken by about 90 pupils, instructed in four sections for five periods weekly. Each of the two teachers of general science has charge of two sections. About 13 weeks are usually devoted to the work.

In giving the instruction in addition to assignments of lessons from the text, laboratory demonstrations are given by the teacher and some experimental work is done by groups of pupils and by individuals. Each pupil records in a notebook the result of observations of phenomena he may see. The topics are taught with about the same degree of efficiency as in other schools that have taken up this course.

Although some of the apparatus and material needed for this work may be borrowed from the biology department it will not be possible to use its laboratories; it is therefore suggested that tables be provided in sufficient numbers so that pupils may work in groups of four. The tables used for physics may of course be used when available. It is also desirable that home projects be encouraged.

It is further suggested that both in biology and general science classes there be more systematic effort to correlate the instruction with the composition exercises of the department of English. There are many biologic topics that are excellent subjects for both oral and written work in English; for example, the necessity of wild bird protection, the need for the destruction of insect pests or the conservation of our food fishes. These are admirable topics of a practical nature.

In general it may be said that the teaching of biologic science with the present staff of instructors may readily be made to compare favorably with the same kind of work in the best schools by providing the teachers with all the room, apparatus and facilities needed for first-class instruction.

Physical and Earth Science

The work in physical and earth science in the Niagara Falls High School at the present time includes physics, chemistry, applied chemistry, general science and physical geography.

Instruction in these branches is given by two men and one woman. All three of these teachers are college graduates with successful experience in teaching high school science.

The work of each of these teachers was visited. One man teaches chemistry, applied chemistry, general science and physical geography. The other man has general science and physics. The woman has physical geography and physics. In general, it appeared that the teachers were well informed in subject matter and that they used approved methods of instruction. The laboratories are fairly fitted and furnished, though a somewhat more liberal use of funds in this direction would render the efforts of teachers and pupils more effective.

From the observations made the impression remained that the work in physical geography was not so strong as that in the other subjects.

Physics is studied by 91 pupils in four sections, chemistry by 24 in one section, applied chemistry by 22 in one section, physical geography by 76 in three sections and general science also by 76 in three sections. The entire registration of the school was given as 860. The following table, showing the per cent of high school pupils in each science, prepared from these data and like data[1] for the entire State, is of interest:

TABLE 15

Physics		Chemistry		Applied chemistry		Physical Geography		General science	
Local	*State*	*Local*	*State*	*Local*	*State*	*Local*	*State*	*Local*	*State*
10.58	6.19	2.79	3.33	2.55	.38	8.84	2.77	8.84	.35

From the above it is observed that this school exceeds the State in the per cent of pupils pursuing each of these subjects with the single exception of chemistry, but if the chemistry and the applied chemistry are grouped, we find the local per cent to be 5.34 as contrasted with 3.71 for the State. It is of interest further to note that a total of 33.6 per cent of the pupils of this school are pursuing these subjects as contrasted with 13.02 per cent for the State.

Drawing and Industrial Arts

Throughout the school system in connection with the work in drawing and industrial arts there was found an excellent spirit of cooperation existing between teachers and their supervising officers and between both the teachers and supervisors and the superintendent of schools.

[1] For year ending June 30, 1918.

In some respects the art work seems to be largely cultural, for the sake of appreciation, the courses being planned for the student body as a whole. No opportunity is offered in high school for the talented pupil to continue his art training in advanced special courses. With the exception of the vocational work, even the industrial work is organized along cultural lines. Opportunity is offered, however, for the high school boys to elect advanced courses which should be of considerable value to them in broadening their industrial horizon and in preparing them to enter engineering schools.

Out of the 965 high school pupils registered, but 100 are taking the art courses which include elementary representation, elementary design and intermediate drawing only.

There are 127 pupils registered in the mechanical drawing courses, which include elementary mechanical drawing as outlined in the secondary syllabus, mechanical drawing 2 or intersections and development of surfaces, a course which is intimately correlated with the sheet metal work, mechanical drawing 3 or machine drawing. The largest class in mechanical drawing contains 27 and the smallest class 1 pupil. The same irregular scheduling of pupils obtains in the mechanical as in the freehand drawing. To a lesser degree it affects the shop work also.

The shop courses offered in the high school are as follows: (1) carpentry and joinery, wood turning, (2) elementary and advanced sheet metal, (3) cabinetmaking.

The courses in elementary representation, elementary design and intermediate drawing follow very closely the recommendations in the syllabus. The following plates are made in elementary representation:

1 Cylinders
2–3 Cups with handles
4–5 Pitchers giving attention to handles and spouts
6 Plant jars
7 Plant jars grouped in vertical and horizontal positions
8 Funnel, can and bottle, grouped
9 Parallel and angular perspective, boxes and books
10 Group of books, angular and parallel perspective
11 Berry baskets separately and in groups
12 Berry baskets
13 Building, in angular perspective
14 Groups — box, bottle, small dish
15–16 Group of pottery forms

17 Plant and flower forms, in pencil
18 Plant and flower forms, in crayola

The intermediate drawing outline is similar to the outline given above except that the projects specified are more difficult. Light and shade is included in this course.

The design course includes the making of portfolios, designing for tucks and embroidery patterns, designing of a shirt waist, designing of an emblem or a design for braid (in color), designing of a winter dress for school or business and an afternoon dress. The choice of a final project is left to the pupil. It is intended to correlate this course with the home economics course in sewing. Boys electing to take the design course are allowed to design posters for school and community use and to work out other problems in applied design.

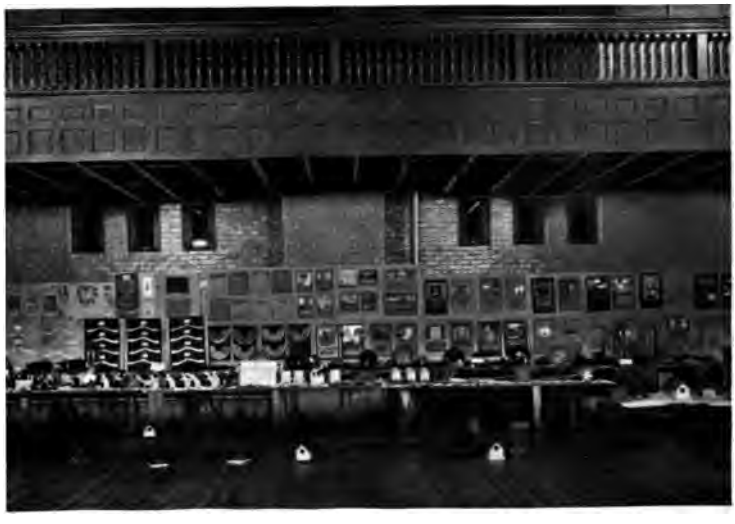
First year mechanical drawing aims to give the pupil a thorough grounding in the principles of projection and to enable him to letter attractively as well as to draw accurately the working drawings required in the shop. The principles involved are those set forth in the syllabus. Time devoted: 40 weeks, 3 periods a week, 45 minutes a period.

Second year mechanical drawing aims (*a*) to give the pupil a thorough knowledge of the layout of sheet metal construction. (In the drawing room he must solve the identical problems that present themselves in the shop.) (*b*) To continue the solving of problems in working drawings more advanced in character. (This involves drafting room practice requiring the making of original drawings, tracing and blue printing.) (*c*) To enable the pupil, through practice, to make use of mechanical drawing as a means of expression in the various industrial lines. Time devoted to subject: 40 weeks, 2 periods a week, 45 minutes a period.

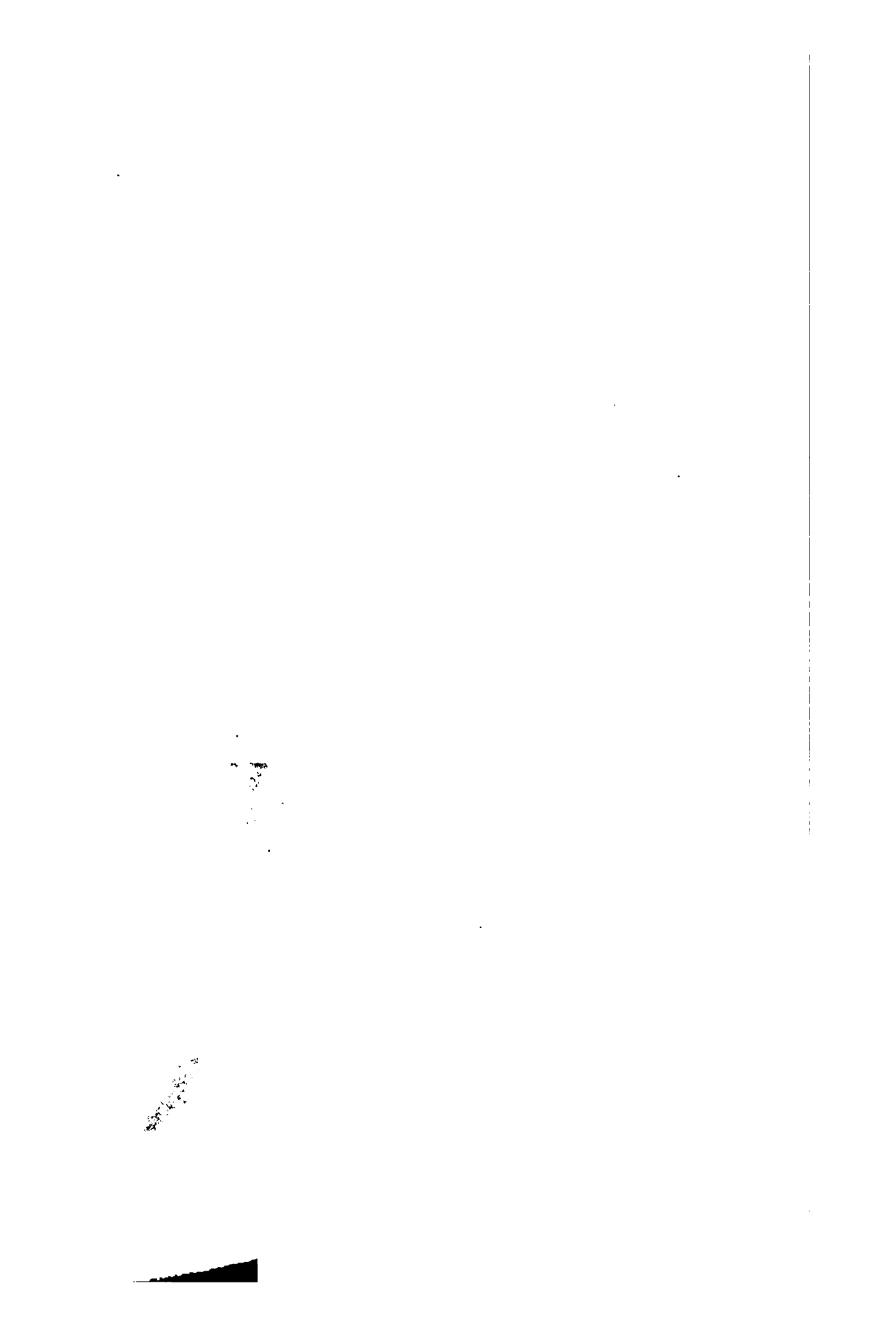
Third year mechanical drawing aims to carry through to a still more advanced plane of appreciation and skill the principles involved in the two preceding courses. The course aims to equip young men to enter the local drafting rooms as beginners. Emphasis is placed especially on machine drawing. Time devoted to subject: 40 weeks, 2 periods a week, 45 minutes a period.

First year shop, carpentry and joinery, (a half-year course) aims to teach the fundamental principles underlying joinery and house construction. Considerable elementary cabinet work is done, some being for the school system. The class is at present making drawing tables for use in the grammar schools. Details or small sections of house construction are built as well as some large work done to

ANNUAL SCHOOL EXHIBIT IN STATE ARMORY
A partial view. Machine shop department



ANNUAL SCHOOL EXHIBIT IN STATE ARMORY
A partial view. Drawing and industrial arts



a reduced scale. A study is made of the industries involved. Time devoted to subject: 20 weeks, 4 periods a week, 45 minutes a period.

First year shop, wood turning, (half-year course). The second half of the first year is given over to wood turning and such projects as chisel and file handles are made for the school shops. As a final project each pupil is allowed to turn for himself a lamp shaft or similar article.

Second year shop, sheet metal, (half-year course). This course aims to teach the pupil the fundamentals of sheet metal working. Water pails and other useful articles are made for the schools. An attempt is made to include considerable subject matter in the course. This includes the theory governing the new operations.

Second year shop, advanced sheet metal, (half-year course). Carries on the instruction offered in the more elementary course preceding. It places more emphasis on the drafting of patterns. Larger projects, such as ash cans and camp stoves, are constructed. Time devoted to subject: 20 weeks, 4 periods a week, 45 minutes a period.

Third year shop, cabinetmaking, is planned to acquaint the pupils with a few of the best methods of furniture construction. Emphasis is placed upon design. Considerable work is done on the machines. The pupil is allowed to spend one-third of his time on an individual piece of furniture which he is allowed to take home upon paying for the material used. The projects must be other than mission in design. A brief study of the period styles, Louis XIII, Chippendale, Sheraton, colonial etc., is carried on in connection with the making of pieces of furniture. Such projects as tables, chairs and phonograph cases are constructed. Time devoted to subject: 40 weeks, 6 periods a week, 45 minutes a period.

The unit trade school is organized on a high school basis, eighth grade graduation being required for entrance. Two men are employed full time as instructors, a machine shop teacher and a teacher of related drawing, mathematics and English. Men engaged as foremen and superintendents in local plants are invited to talk to the boys during the assembly period, which is held for 45 minutes every other week. The organization of this school is not complete enough to be examined at this time *as a school.* What is being done is practical and the work is being well organized.

Trade School Courses

The vocational industrial work is well described by the director of this work, William J. Small, in the paragraphs which follow:

" Last fall we opened a vocational machine shop course with 30 boys in attendance. This course promises to be the beginning of an

extensive vocational program for our city. Next year we are planning to instal an advanced machine shop and an elementary electrical shop with approximately 90 boys in attendance.

"We have established an entrance requirement of eighth grade graduation for all these classes and find by doing this we get a more uniform group.

"The shop work is of a productive nature and no abstract exercise work is given. The elementary machine shop work consists of small tools and work done for the school department. Two grinders, vises, metal bench standards have been constructed this year. Several observation trips have been made to nearby industrial establishments to give the pupils an idea of production methods.

"The English work corresponds to that of first year high school with the exception that instead of reading all the required classics, books relating to mechanical work are substituted. Our trips are made the basis of both oral and written composition. Technical subjects as 'The Open Hearth Process' and 'The Bessemer Process' are especially interesting as composition work for this group.

"The mathematics is closely correlated and function with the daily work of the shop. A few practical problems in the applications of algebra, geometry and trigonometry are given.

"The drawing is tied up with the shop and about one period in five is devoted to shop sketching. All the problems made in the shop are worked out in the drawing room.

"Next year related science for the elementary class and industrial history for the advanced class will be added.

"A serious attempt is being made in the new trade school to carry out the recommendations of the report of the industrial education survey made by the Division of Agricultural and Industrial Education during the summer of 1919."[1]

Evening Schools

The following courses were offered during the evening school period of 1919–20 being taught by instructors as described below:[2]

A round table course for chemists (a chemist in industry).

Two cabinetmaking courses (men from the schools).

Two mechanical drawing courses (men from the schools).

Drawing and estimating for carpenters and builders (an architect in the city).

[1] See chapter 13, Industrial Education Survey.

[2] None of these classes was in session at the time this survey was made.

Mathematics for tradesmen (man from the schools).
Electrical work, wiring and theory (foreman in United States Light and Heat Company).
Telegraphy (Western Union operator).
General chemistry (a chemist from industry).
Industrial chemistry (a chemist from industry).
Two automobile repair courses (garage men).
House framing (journeyman at trade).
Machine shop (a machinist).
Related drawing and mathematics for machinists (an engineer).

Summary

The Niagara Falls High School occupies a very attractive site near the center of the city. It is a comparatively modern building, its present inadequacy being due to the rapid increase in high school population and to the greatly increased demands on the secondary field.

The average daily attendance in the high school during the past 10 years has increased 57 per cent. This is somewhat less than the percentage of increase in the elementary schools during the same period. The increase during the period of the World War was not marked. This situation in the Niagara Falls High School is much the same as that found in other high schools during the same period. The appeal from the industrial field due to the unusual wages for services affected high school registration very generally in the industrial centers.

The pupil registration per teacher shows that the school is not over-organized and that the number of pupils to a teacher is somewhat larger than is found in many high schools.

There are six general courses of instruction in the high school: college entrance, scientific, normal or teacher training, household arts, industrial and manual arts, and commercial.

The household arts and manual arts courses have attracted relatively a small proportion of the student body. This has been due in part possibly to the lack of needed space and equipment. The small number in the teacher-training course is due to a general situation, economic in character, and related also to the salaries paid for teaching service.

The instruction in the various subjects in the high school is generally good and in some instances superior. Certain limitations upon the effectiveness of the work are due to crowded conditions. These will be eliminated when the new building program is under way.

The general summary of the conditions as observed in the classrooms indicates the need for some more definite organization, the advantages of departmental heads being emphasized by several of the specialists.

It was observed that in some instances teachers were not specially trained for the work which they were called upon to do. The work in English was somewhat uneven where the instruction was given by teachers whose major interest was in other subjects. Three hundred twenty-two out of 846 pupils were enrolled in Latin. The work in this subject was reasonably strong except in the first year classes.

The present program provides for the following classes in history: ancient history, modern history, American history, community civics, economics and commercial geography. The work is in a transition stage but much of the work observed was strong. The equipment in maps and charts was reasonably complete but might be strengthened if special rooms with equipment as a department for this work were fitted up. The work in mathematics is so arranged that each teacher has generally one free period each day. Classes range from 15 to 20 enabling the teacher readily to keep in touch with the individual needs of the pupils.

The work in science includes biology and general science, physics and chemistry, applied chemistry, and physical geography. As this work develops it is being related more and more to the needs of the locality in connection with which there is an unusual opportunity at Niagara Falls.

The work in drawing and industrial arts includes elementary representation, elementary design, intermediate drawing, mechanical drawing with advanced courses, carpentry and joinery, cabinetmaking, wood turning, sheet metal, advanced sheet metal, in addition to the vocational and trade school courses. This work is rapidly meeting local needs and conditions. A serious attempt is being made in the trade school to carry out the recommendations of the report of the industrial education survey.

In the plans that are under way for the development of the school program, wise provision is being made for additional high school facilities which will give Niagara Falls the best type of cosmopolitan high school which is generally recognized as offering the best type of high school training. The local school authorities and the city as a whole are to be commended for the larger opportunities that are to be provided in the plans that are under way for the development of the high school unit.

When the new school program now under way is adopted, Niagara Falls will have not only a very superior elementary and intermediate school plant but will have secondary high school opportunities and a reorganized secondary school program which is second to none in the cities of its class in the country.

9

THE MEASUREMENT OF PUPIL ACHIEVEMENT

A school system exists in order that children may achieve information, skills and ideals that will be of value to them and to society. The school plant, equipment and supplies, the organization of the school, the training and qualifications of teachers, the methods of supervision, the courses of study — all of these are but means toward the chief end or aim of the school, that is, *pupil achievement.* The measurement, then, of the achievement of pupils becomes the central and most important part of any survey or judgment of a school system. This statement is particularly true when the results of the measurement are made available to the officers and teachers of the school system so that they may use the data in revising and improving where needed their whole scheme of instructional activity.

Educational Tests and Scales

During the past 20 years, the most notable advance in education has been the ideal and practice of scientifically measuring the result of classroom teaching. The first educational scale was published about 1908; since that date, the development has been so rapid that there are now more than two hundred scales or tests available for measuring pupil ability and achievement. A number of these have been so carefully constructed and so widely used that their results are quite reliable for judging the success of a school system, a school, a class and in some respects even the individual child.

How Educational Tests Differ from the Ordinary School Examination

1 The educational test is constructed from materials that are most generally conceded to be essential for instructional purposes.

2 The standards set up to be attained are, as a rule, based upon the actual achievement obtained by thousands of pupils in many different school systems.

3 Rules for administering the tests are so carefully prepared that teachers and principals or examiners, working in widely separated localities, can be assured that, by following the directions, all pupils will have exactly the same opportunity so far as any instructions are concerned.

4 Explicit rules are laid down for scoring the tests, so that gross differences of opinion as to what answer should be accepted as correct are eliminated.

The Value of Educational Tests for Measuring School Achievement

By using tests that are constructed from material that is generally accepted as essential in the courses of study of all school systems, by having directions for administering these tests worded very explicitly, so that all who use the test will give exactly the same instructions, and by having very concise and definite rules for scoring the test, it is possible to compare the scores for grades and classes in any city with the scores obtained by the same grades in any other school system.

The superintendent, principal and teacher can see:

1 How their own system compares with the school systems of other cities.

2 How the different schools within their city system compare one with another.

3 How each class compares with other classes in the same school or school system.

4 In addition to this, the classroom teacher will have a fairly definite score or rating of each individual pupil in her class.

Phases of Pupil Achievement Measured in Niagara Falls Survey

The time and clerical work at its disposal did not permit the survey committee to undertake a testing program that would evaluate phases of all subjects or achievement of pupils in all grades. It was deemed advisable to center on a few subjects that are generally considered to be the basic or most essential subjects in the public school. The subjects tested were spelling, composition, language, writing, arithmetic and silent reading. It should also be kept in mind that these educational tests measure only certain phases of the subjects tested. For example, the silent reading test used measures the rate or speed with which children read, and their ability to comprehend or understand the printed page; but it does not measure their ability to read orally. Likewise, the arithmetic scale measures children's ability to add and subtract, multiply and divide through common and decimal fractions, United States money and denominate numbers but the scales used do not measure the pupils' ability to reason in arithmetic or their skill in solving problems in such important subject matter as interest or percentage. In the discussion of the results of the

various tests more attention will be given to the special phases of school work that these tests do measure.

Statistical Terms

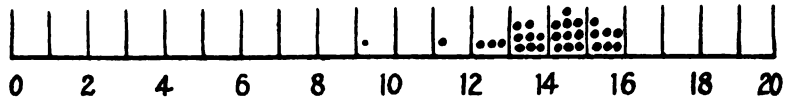


FIGURE 3 — Illustration of the median or class score

The data of figure 3 illustrate a few terms that will be used frequently in this report. The line represents an arithmetic subtraction scale. The scale contains 20 problems and may be thought of as a measuring rule 20 units in length. In this case it was used to measure the ability in subtraction of a class of 30 pupils. Seven pupils solved 15 problems correctly or measured 15 on the scale; 10 solved 14; eight, 13; three, 12; one, 11; and one, 9 problems. The *class score* is that point on the scale which divides the class group into two equal parts; that is, the point above which one-half of the class scored, and below which the other half scored. This mid-point is called the *median;* and in this case is 14.2, which means that half the class scored more than 14.2 and the other half scored less than 14.2.

The *standard score,* unless otherwise defined, is the score that a class should obtain. The median score achieved by thousands of pupils of a given grade from schools of many different cities and states is usually accepted as the *standard score* for a given grade. Where a different meaning is given to any of these terms, an explanation will be given in the text. Other statistical terms will be defined in footnotes.

Administration of Tests

There was a threefold purpose in administering the tests: (1) to gain a reliable measure of the schools' ability in fundamental subjects; (2) to secure data that would be of use to teachers and supervisory officers in improving the work of the schools; (3) to give principals, supervisors and teachers such experience in the method and procedure of testing as would enable them to use educational tests later in their regular work.

Following the directions of the survey committee, classroom teachers in grades 3–9 administered the tests in spelling and handwriting and high school teachers administered the reading and language tests to ninth grade pupils. With the exception of the spelling

and handwriting, before tests were given the members of the survey committee met with the principals and supervisors to outline and consider the entire program. At this meeting it was agreed that the principal should observe the members of the committee in giving each of the several tests and where feasible the principal should test one or two classes under the direction of the committee members. Members of the committee gave the group intelligence tests to all pupils tested and the tests in composition, silent reading, language, addition and multiplication to all classes of the sixth, seventh and eighth grades, and to at least one section of each of the third, fourth and fifth grades in every building. Where there was more than one section of third, fourth and fifth grade pupils in a building to be tested, the principal gave the tests to a part of the classes. In addition, principals administered the subtraction and division tests to all classes tested.

Scoring the Papers

Following the directions submitted by the survey committee, teachers scored all the spelling papers and the rate of the handwriting. The quality of the handwriting and the quality of composition was scored by teachers and supervisors in a meeting with members of the committee. In the scoring of both of these tests, teachers were divided into teams of three. Each teacher scored the paper and recorded her score on the back. The median of these three scores obtained independently was taken as a final rating of the paper. Subtraction and division tests were scored by teachers and principals. Later, the scoring of spelling and composition was checked carefully by members of the survey committee. All other papers were scored under the direction of the committee.

The detailed method of scoring papers, checking results, and analyzing the data will be explained in the following pages under the discussion of the results obtained by the testing of each subject.

Spelling

Choice of Words for the Test

The words chosen for the survey of spelling ability were selected from the Buckingham extension of the Ayres spelling scale. The original part of this scale consists of 1000 words most commonly used in English writing. The Buckingham extension of the scale consists of 500 words added to the upper or more difficult part of the scale. These latter words were selected primarily "according to agreements among spelling books." All the words used to test the

third to seventh grades, inclusive, were taken from the original Ayres list. Eight of the eighth grade list and eighteen of the ninth grade list are from the Buckingham extension of the scale. The words used to test grades 3–6 are the same as those used in the Cleveland and Gary surveys. The entire list is contained in table 16.

TABLE 16

Words in Niagara Falls spelling test

Grade 3	4	5	6	7	8	9
catch	afraid	sometimes	often	meant	organization	decision
black	uncle	declare	stopped	earliest	emergency	principle
warm	rather	engage	motion	whether	appreciate	accommodate
unless	comfort	final	theater	distinguish	sincerely	accuracy
clothing	elect	terrible	improvement	consideration	athletic	counterfeit
began	aboard	surprise	century	colonies	extreme	dessert
able	jail	period	total	assure	practical	digestible
gone	shed	addition	mention	relief	proceed	immense
suit	retire	employ	arrive	occupy	cordially	leopard
track	refuse	property	supply	probably	character	marmalade
watch	district	select	assist	foreign	separate	millionaire
dash	restrain	connection	difference	expense	February	mucilage
fell	royal	firm	examination	responsible	antique	orchestra
fight	objection	region	particular	beginning	bicycle	parliament
stop	pleasure	convict	affair	application	calendar	perceived
walk	navy	private	neither	difficulty	consequence	recommended
grant	population	command	local	scene	disease	resemblance
soap	proper	debate	marriage	finally	fatigue	possess
news	judge	crowd	further	develop	foreigners	precipice
small	weather	factory	serious	circumstance	grease	restaurant
Set L	O	Q	S	U	W	Y
Value at midyear 73	73	73	73	73	73	73

Grade Standards

The midyear standard is the average score made by the children of 84 cities. The words were selected so that this midyear standard would be 73 for each grade. This means that if each grade had been tested with this list of words on January 30, 1921, the average for the grade should have been 73. If the same pupils had been tested with the same words at midyear 1920, the average should have been 50 for third and fourth grades and 58 for grades above the fourth Since Niagara Falls pupils were tested in October it was necessary to derive from the scale values the approximate standard for each grade in October. These approximate standards are 65 for the third and fourth and 68 for the fifth, sixth, seventh, eighth and ninth grades.[1]

Scoring and Checking of Spelling

Members of the survey staff or their assistants checked the teachers' marking of the spelling papers as follows: every fifth paper was read and if any errors were discovered in the marking of papers then the entire set was rechecked by a member of the staff. The calculation of the class average or class score was checked for each set of papers.

Where there were two or more sections of a grade in a building, these scores were combined and treated as if they constituted one class in order to obtain the grade scores for the building. Table 17 shows the grade scores for each building of the Niagara Falls school system. In studying this table it should be kept in mind that if these pupils had been tested at midyear they should have scored at least 73 per cent for each grade and that the standard they should have obtained in October was 65 per cent for grades 3 and 4 and 68 per cent for each grade above the fourth.

[1] For method of determining October scale values, see "Measuring the Work of the Public Schools," Cleveland Survey Report, p. 243–44.

TABLE 17

Spelling report by grades and schools

Giving the average score made in spelling by each grade in each of the fourteen elementary schools, the vocational school and the first year of high school, and the average score for each grade of the city; also, showing how the Niagara Falls schools compared with the spelling standards from other city school systems.

	Scores by Grades						
School	*3d*	*4th*	*5th*	*6th*	*7th*	*8th*	*9th*
Ashland	56	49	61	75	..	..	..
Center	60	53	56	69	..	..	..
Cleveland	68	52	53	72	66	68	..
Ferry	45	34	58	69	..	..	..
Fifth	55	42	69	81	68	73	..
High	..	..	..	..	..	..	59
Maple	44	49	68	81	..	..	..
Niagara	52	41	60	79	77	65	..
Sugar	60	43	64	72	..	..	..
Tenth	52	51	62	84	64	..	..
Third	61	47	76	77	..	..	..
Thirteenth	50	37	62	76	..	..	..
Twenty-fourth	58	44	53	81	62	56	..
Twenty-second	51	50	51	72	66	..	..
Whitney	48	50	60	68	..	..	..
Vocational	..	..	..	..	..	..	57
Average	54	46	60	75	68	69	..
Approximate grade standards for October	65	65	68	68	68	68	68

A study of table 17 shows a considerable difference in spelling ability between schools. This is illustrated by the following data: the third grade in Maple Street School scored 44 and in Cleveland Avenue School 68; the fourth grade of Ferry Street School scored 34 and of Center Street School 53; the fifth grade of Twenty-second Street School scored 51 and of the Third Street School scored 76; the sixth grade of Whitney Avenue School scored 68 and of Tenth Street School 84.

The average ability of schools ranges from $50\frac{1}{2}$ to $64\frac{2}{3}$, or a difference of 14 per cent. One naturally must ask the question as to why this wide difference in results between pupils of the same grade in different school buildings, and between buildings or schools in the same city. Similar results are found in practically all the tests that were given. This report endeavors to throw some light on the answer to this question but it remains for principals, teachers and supervisory officers to give the final answer.

Another interesting fact from the table lies in the wide difference of achievement between grades. The achievement in each grade should be practically the same. Yet we find the average for the third grade 54 while the fourth grade averages only 46. The sixth grade scores considerably above the standard, reaching the high point of 75, while the seventh and eighth grades drop back to 68 and 69 respectively. The lowest sixth grade score is equal to the highest third grade score and is 13 points higher than the highest fourth grade score. This difference may be due in part to the fact that the

measurement is based upon a small number of words and that the words may not be included in the curriculums for the different grades. Principals and teachers will find it profitable to test these same grades with other lists of words selected from well-standardized scales and so determine whether or not the fifth and sixth grades have received more attention in the study of spelling than have the two lower grades.

TABLE 18

Spelling scores

Showing how the Niagara Falls schools compared in spelling ability with the schools of other cities

City school system	*Date tested*	*Average score attained in grade* 3	4	5	6	7	8	9	*Average*
Niagara Falls	Oct.	54	46	60	75	68	69	68	62.8
Elmira[1]	Oct.	50	50	61	70	67	76	58	61.7
Whitehall[1]	Nov.	66	55	57	72	73	81	..	67.3
Saratoga[1]	Nov.	64	65	68	79	71	83	..	71.7
Cleveland[2]	May	78	73	75	78	76	80	..	76.7
Gary[2]	May	56	53	51	58	62	43	..	55.5
Midyear standard[3]		73	73	73	73	73	73	73	73

Table 18 shows how Niagara Falls compares with three other New York cities that were tested with the same list of words and with the Cleveland and Gary schools which were tested, in the main, with the same words. The table also shows in which months of the school year the respective schools were examined. If deductions were made from the Cleveland and Gary results to allow for the gain in achievement from October to May, the achievement of the Cleveland schools would still be above that of Niagara Falls. Since there was approximately a month's difference between the testing of Niagara Falls and the Whitehall and Saratoga testing, it is doubtful if any material allowance should be made for the higher rating of the two latter systems. The table then shows that Niagara Falls ranks fourth among these places in the spelling achievement of grades 3–8 inclusive.

Summary

Taking the school system as a whole, the spelling ability of pupils in Niagara Falls falls below the standard that should be expected. The chief deficiency is in the lower grades, which points to the fact that the spelling curriculum of these grades is either not wisely selected, that enough time is not given to spelling, or that the methods of teaching in these lower grades are insufficient. The records indi-

[1] From unpublished reports made by State Education Department, New York.
[2] From "The Gary Public Schools. Measurement of Classroom Products," p. 82.
[3] This midyear standard for grades 3–7 is the average score obtained by the school children of 84 cities as given on the Ayres scale; for grades 8 and 9 it is the standard given on the Buckingham extension of the Ayres scale.

MAPLE AVENUE SCHOOL

A modern elementary school building under construction

ASHLAND AVENUE SCHOOL

Kindergarten and first six grades

cate, that beginning with the fifth grade, the Niagara Falls schools achieved as much in spelling as the average of city schools throughout the country.

Reading

No attempt was made to test oral reading, because the greater part of reading that is done in life is silent reading. Children's success in practically all school subjects depends upon their ability to read rapidly and to comprehend the meaning of what they read. In order to secure a measure of the success with which the Niagara Falls schools are teaching children in these two important phases of reading, all pupils in grades 3 to 9 inclusive were tested with the Monroe standardized silent reading test, form 1. This test consists of three parts: test 1 for grades 3, 4 and 5; test 2 for grades 6, 7 and 8; test 3 for grades 9, 10, 11 and 12.

The same directions, however, are given to all pupils; these directions are printed on the first page of the test booklet and are read together by examiner and pupils. The following quotation from the test booklet indicates the nature of these instructions:

Directions for Giving the Test

After telling the children not to open the papers, ask the children on the front seats to distribute the papers, placing one upon the desk of each pupil in the class. Have each child fill in the blank space at the top of this page. Then make clear the following:

Instructions to Be Read by Teacher and Pupils Together

This brief test is given to see how quickly and accurately pupils can read silently. To show what sort of test it is, let us read this:

> I am a little dark-skinned girl. I wear a slip of brown buckskin and a pair of soft moccasins. I live in a wigwam. What kind of a girl do you think I am?
>
> Chinese French Indian African Eskimo

The answer to this exercise is "Indian" and it is to be indicated by drawing a line under the word. The test consists of a number of exercises like this one. In some of the exercises you are told to draw a line under the word which is the right answer or to mark it in some other way, and in some you are to write out your answer. If an exercise is wrong it will not count, so it is wise to study each one carefully until you know exactly what you are asked to do. The number of exercises which you can finish thus in five minutes will make your score, so do them as fast as you can, being sure to do them right. Stop at once when time is called. Do not open the papers until told, so that all may begin at the same time.

The nature of the test is further illustrated by the following extracts, which are the second questions on the respective parts or tests:

Test 1 for Grades 3, 4 and 5

No. 2

The little Pilgrim girls carried their workboxes to the dame-schools and learned to sew and knit as well as to read and write.

Where did the girls go with their workboxes?

To the.....

Test 2 for Grades 6, 7 and 8

No. 2

At evening when I go to bed
I see the stars shine overhead;
They are the little daisies white
That dot the meadow of the night.

What are the little white daisies of the night?

.....

Test 3 for High School

No. 2

The tighter a wire is stretched the higher the tone produced when the wire is struck. Two wires are stretched, one with a fourteen-pound weight pulling on it and another with a ten-pound weight pulling on it. Which wire will produce the higher tone, the former or the latter?

.....

Reasons for Using the Monroe Silent Reading Test

a The test requires less than 10 minutes for giving instructions and for pupils' writing.

b The directions are printed on each copy of the test and the pupils read them with the examiner; this eliminates the variation that too often accompanies the giving of oral instructions by different people.

c The correct answers are brief and the papers are easily scored. Any teacher who follows the printed directions carefully can score the papers.

d There are three forms of the test: a school may test the ability of its pupils in silent reading, two or three times each year without using the same questions a second time. The three forms are approximately of equal difficulty; that is, a child should make about the same score on each of the three forms of the test.

e The test gives a measure of two important phases of silent reading: (1) the speed with which children read silently, and (2) their ability to comprehend what they read.

Scoring the Papers

In scoring the papers, the directions and answers given on the class record sheets were used with the following interpretations:

a If an answer was written out as a complete sentence, it was considered correct.

b If qualifying words were added to the correct answer it was usually accepted.

c Words to be underscored or indicated in some other way which were marked in the paragraph rather than in the list below were accepted.

d If there seemed good reason to believe that a pupil had skipped several paragraphs without reading them, he was given a rate score equivalent only to the sum of the rate scores of the paragraphs which he had actually attempted to answer.

Method of Finding Grade Scores

To find class scores given in table 19, the directions given on the class record sheet were followed. The grade scores for each building were obtained by combining all papers of the different classes of that grade for the building and finding the medians by the ordinary method. Grade scores for the city at large were obtained in a different way, namely, by finding the median of the class medians of all the classes of each grade in the school system. By the median score we mean the score above which there are as many scores as there are below it.

TABLE 19

Grade scores, Monroe silent reading test

Showing the score made by each grade of each building and the median of these class scores for each grade of the city system; also, showing the midyear standard scores

School	*3d*		*4th*		*5th*		*6th*		*7th*		*8th*	
	R	*C*	*R*	*C*	*R*	*C*	*R*	*C*	*R*	*C*	*R*	*C*
Ashland	36	2	45	5	84	14	83	18	..	....	..	....
Center	40	2	80	9	87	13	83	16	..	....	..	....
Cleveland	48	3	59	8	84	12	90	17	84	17.5	86	20
Ferry	22	2	54	5	67	10	69	13	..	....	..	....
Fifth	54	4	59	7	79	13.5	87	17	84	19	84	20
Maple	22	1	54	9	67	13	81	14.5	..	....	..	....
Niagara	..	...	54	5	82	11	81	13	64	14	81	18
Sugar	44	3	82	11	106	18	54	13	..	....	..	....
Tenth	44	3	67	8	68	11	..	....	..	....	..	....
Third	44	4	67	10	98	16	81	17	..	....	..	....
Thirteenth	39	1	70	7	76	12	81	10	..	....	..	....
Twenty-fourth .	33	1	60	7	70	11	98	16	98	15	81	18
Twenty-second .	22	1	59	8.5	67	11	85	14	98	17	..	....
Whitney	37	2	68	9	87	13	81	17.5	..	....	..	....
Median of class scores, or grade - scores for Niagara Falls.....	44	3.8	69	8.6	86	12.9	90	15.5	83	16.5	89	18.9
Midyear standards	52	6.8	70	12.7	87	17.8	90	18.5	100	22.8	106	26.0

Niagara Falls Silent Reading Scores

The midyear standard scores of table 19 are based on the achievement of 130,000 pupils. In studying the comparison of Niagara Falls scores with these standards two things should be kept in mind: (1) Niagara Falls pupils were tested about the middle of October rather than at midyear; (2) the results obtained in grades 3, 4 and 5 can not be compared with those obtained from different test material in grades 6, 7 and 8 nor the latter results with those obtained from use of the high school test.

Two scores are given in table 19 for each grade of each school: the first, in the R column is the measure of the rate or speed of silent reading; the second, or C, column is the measure of the ability of the pupils of the respective grades to comprehend the meaning of the printed paragraphs in the test booklets.

The rate or speed scores of Niagara Falls grades 5 and 6 are approximately equal to the standard midyear scores; but the rate scores for grades 4, 3, 7 and 8 range from 3 points to 17 points below the midyear standards. The comprehension scores of Niagara Falls range from 3 points in the third grade to 7.1 points in the eighth grade below the midyear standards. (Due to an apparent error in administering the test, the scores from the first year high school pupils are omitted from this report.)

Another point of comparison is given in table 20, which shows how certain grades of Niagara Falls compared with the standard scores that the same pupils would have been expected to attain had they been tested in May or June of the previous year.

TABLE 20

Comparison of Niagara Falls silent reading scores with standard scores the same pupils should have achieved had they been tested near the end of the previous school year

Grades	4		5		7		8	
	R	*C*	*R*	*C*	*R*	*C*	*R*	*C*
Previous "End of the year" standards	60	9.3	79	15.3	96	21.0	104	24.5
Niagara Falls October scores.	69	8.6	86	12.9	83	16.5	89	18.9
Points scored above given standard	+9		+7					
Points below given standard		—.7		—2.4	—13	—4.5	—15	—5.6

Table 20 shows that grades 4 and 5 read more rapidly, and grades 7 and 8 more slowly than the standard that should be expected of these same pupils had they been tested the previous May or June. Their ability to comprehend the thought of the printed page is below standard in each grade and increasingly lower as pupils progress through the grades; that is, the fourth grade scores .7 below the

standard; the fifth grade 2.4 below, the seventh grade 4.5 below; and the eighth grade 5.6 points below the standard.

Table 21 shows how Niagara Falls and Elmira compare in the ability of the children of grades 3 to 8 inclusive to read silently. The two school systems were tested during consecutive weeks and by the same examiners.

TABLE 21

Comparison of silent reading ability of Elmira and Niagara Falls schools

School system	*3*		*4*		*5*		*6*		*7*		*8*	
	R	*C*	*R*	*C*	*R*	*C*	*R*	*C*	*R*	*C*	*R*	*C*
Elmira	44	3.9	76	11.3	98	16.5	81	18.3	90	21.5	98	22.5
Niagara Falls.	44	3.8	69	8.6	86	12.9	90	15.5	83	16.5	89	18.9

The table shows that Niagara Falls pupils score lower than Elmira pupils in their ability to understand the meaning of the printed page.

Summary

The results of the silent reading test indicate: (*a*) That pupils of grades 3, 4, 5 and 6 of Niagara Falls read on the average as rapidly as pupils in other schools; but that the seventh and eighth grades read much more slowly; (*b*) that the elementary school pupils do not comprehend the meaning of what they read nearly so well as do the average of pupils in other schools; (*c*) that while each succeeding grade makes progress in learning to comprehend the meaning of the printed page, this progress is decreasingly less as pupils advance through the elementary school.

Recommendations

The survey committee believes that the teachers and supervisory officers of the Niagara Falls schools will find it profitable to give in an organized way a great deal of attention to the teaching of silent reading. Such an organized effort might properly include among other things the following:

a Making a careful distinction between oral and silent reading and the objectives to be gained through each type.

b Consideration of the best types of subject matter to be taught in silent reading courses.

c Special emphasis on the method of silent reading in such kindred subjects as geography and history.

d Teaching pupils to use books; that is, how to use the index, table of contents, topical headings; and how to find quickly the chief thought of a paragraph.

e A study of methods and types of assignments.

f An evaluation of the different types of questions to be used in the assignment and recitation.

g Use of informal silent reading tests; that is, tests devised by principals and teachers to test the ability of pupils to glean thought quickly from the printed page.

h The use of at least one standardized silent reading test each year, as a means of measuring progress of achievement.

Language

One of the most important factors determining the success of school children is their language ability. As a measure of this ability, the Trabue completion test-language scale C, was used in grades 3 to 9. A copy of the scale follows:

Write only one word on each blank.
Time limit: Seven minutes

Name .....
Grade .....
Age (on last birthday).....

Trabue

Language Scale C

1 The sky ..... blue.
2 Men ..... older than boys.
3 Good boys ..... kind ..... their sisters.
4 The girl fell and ..... her head.
5 The ..... rises ..... the morning and ..... at night.
6 The boy who ..... hard ..... do well.
7 Men ..... more ..... to do heavy work ..... women.
8 The sun is so ..... that one can not .... directly ..... causing great discomfort to the eyes.
9 The knowledge of .... use fire is ..... of ..... important things known by ..... but unknown ..... animals.
10 One ought to ..... great care to ..... the right ..... of ..... for one who ..... bad habits ..... it ..... to get away from them.

This language scale measures, primarily, the general ability of a class, grade or school to do work that involves language difficulties. A full description of the scale, its derivation, the key for scoring, the directions for using it, and the method of interpreting the results is given in the monograph entitled "Key for Completion Test-Language Scales"[1] by M. R. Trabue. The general scheme for rating

[1] Published by Bureau of Publications, Teachers College, Columbia University, New York City.

the test papers is given below as a quotation from page 11 of the monograph.

Score 2

A score of 2 points is to be given each sentence completed perfectly. Errors in spelling, capitalization, and punctuation should not be allowed to affect the score.

Score 1

A score of 1 is to be given each sentence completed with only a slight imperfection. A poorly chosen word or a common grammatical error, which makes the sentence less than perfect and yet leaves it with reasonably good sense should serve to reduce the score from 2 to 1.

Score 0

A score of 0 is to be given if the sentence as completed has its sense or construction badly distorted. A sentence must have reasonably good meaning and express a sentiment which might honestly be held by an intelligent person in order to receive a higher credit than zero.

It will be noted that the perfect score on this scale would be 20.

Standard Scores

Mr Trabue, on page 58 of his monograph, gives the median score that should be obtained by each grade at midyear and the median scores for the lower and upper half of each grade. As an example, the lower third grade should score 7.4, the upper half of the third grade should score 8.6 while the standard midyear score for the class would be 8.0. Trabue's low, or standard score for the first half of each grade is approximately the score that children entering a grade in September should make if tested about the middle of November. It is this score that is used as a standard for Niagara Falls.

TABLE 22

Niagara Falls language scores

Giving the score made by each grade in each school and the standards for the first half of each grade or November standards; also, showing the number of points each grade fell below the "low" or November standards

School	*3*	*4*	*5*	*6*	*7*	*8*	*9*
Ashland	6.4	10.1	11.5	13.2	....	....	....
Center	6.3	8.8	10.4	11.1	....	....	....
Cleveland	5.5	9.4	10	11.6	12.4	13.1	....
Ferry	4.3	6.5	9.5	10.8	....	....	....
Fifth	7.7	9.1	11.2	12.4	11.7	13.4	....
Maple	6.2	8.5	12	13	....	....	....
Niagara	5.3	7.3	8.5	9.8	12	12.6	....
Sugar	6.8	9	11.1	11.2	....	....	....
Tenth	6.1	8	10.4	11.9	11.6	....	....
Third	7.1	9.6	11	12.1	....	....	....
Thirteenth	6.3	7.5	8.9	10.4	....	....	....
Twenty-fourth	7	8.7	11	11.6	11.9	13.1	....
Twenty-second	6.8	9.4	10.5	12.2	13	....	....
Whitney	6.3	8.6	10.3	10.9	....	....	....
High school	....	....	....	....	....	....	14.5
Vocational	....	....	....	....	....	....	14.5
Medians by grades	6.4	8.7	10.45	11.65	12.0	13.05	14.5
Oct. and Nov. standards	7.4	9.6	11.1	12.2	13.1	14.1	15.0
No. points below Oct. standard	1.0	.9	.6	.5	1.1	1.0	.5

N. B. — Note the difference between grade scores for Ferry Street and Ashland Avenue Schools.

Table 22 shows that each grade tested in Niagara Falls scored from .5 to 1.1 points below the standard for the first half of each grade. Interpreted in another way, this means that grades 3, 4 and 5 averaged about one-third of a grade below the standard; and grades 6, 7, 8 and 9 averaged a little more than one-half of a grade below standard. The data of table 23 show how the children of Niagara Falls compare in language ability with children of the same grades in other cities.

TABLE 23

Comparative study of language ability

Showing how the children of Niagara Falls compare with children of the same grades in other American cities, as tested with the Trabue completion test-language scale C

School system	*Date tested*	*Scores by grades* 3	4	5	6	7	8	9
Elmira	Oct.	7.4	9.8	11.1	12.3	13.4	13.8	14.2
Niagara Falls	Oct.	6.4	8.7	10.4	11.6	12.0	13.0	14.5
Nassau co.[1].....		8.2	10.2	....	12.4	....	14.0	....
Whitehall	Nov.	....	....	10.5	11.6	12.9	13.5	....
Chatham, N. J.[2]....	Dec.	....	10.8	11.7	12.2	14.8	15.8	....
St Paul, Minn.[3]....	Feb.	7.8	9.4	11.1	12.2	13.1	14.0	....
Midyear standards..		8.0	10.0	11.4	12.4	13.4	14.4	15.2

An examination of the data of table 23 shows that Niagara Falls not only scores considerably below the midyear standard, but in each grade tested it has the lowest score of any of the six school systems considered in the table. The results indicate that the children of Niagara Falls may not have the native ability for language work that is to be expected of school children of the same grades in American schools. This conclusion, of course, is only tentative, and should be judged in the light of other tests; but it should lead to a closer analysis of the language abilities of individual pupils and the difficulties that confront the teachers of Niagara Falls. One of the chief difficulties confronting teachers is the wide range of language ability in any one class or grade of a school. This fact is shown forcibly by the data of table 24 showing the distribution of language ability for grades 3 and 5 of the fourteen elementary schools.

[1] From "Report of a Survey of Public Education in Nassau County, N. Y." 1918.
[2] From "The Supervisor's Use of Standard Tests," Elementary School Journal, Jan. 1917.
[3] From the Survey of the School System of St Paul, 1917, p. 459.

TABLE 24

Distribution of scores on completion test-language scale C

Grade	School	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Total papers	Median
3	Ashland	3	3	3	3	5	4	10	3	10	1	2	..	1	..	1	..	..	..	..	..	..	49	6.35
	Center	1	..	2	2	8	8	9	4	7	5	2	..	..	..	..	..	..	..	..	..	..	48	6.3
	Cleveland	14	1	5	7	12	9	9	7	7	7	7	2	..	..	..	..	..	..	..	..	..	88	5.5
	Ferry	13	2	10	7	5	4	9	4	9	4	..	..	..	..	..	..	..	..	..	..	..	67	4.3
	Fifth	1	1	2	5	5	3	9	7	11	8	3	3	3	..	..	..	..	..	..	..	..	62	7.7
	Maple	..	1	..	1	2	1	4	1	1	..	..	1	..	..	..	..	..	..	..	..	..	12	6.2
	Niagara	3	1	6	7	4	9	8	1	3	3	1	1	..	..	..	..	..	..	..	..	..	47	5.3
	Sugar	..	1	2	3	6	2	7	5	8	2	3	..	..	..	..	..	..	..	..	..	..	39	6.8
	Tenth	6	2	7	4	3	8	11	6	6	2	3	5	..	..	..	..	..	..	..	..	..	63	6.1
	Third	2	..	1	..	6	1	6	5	8	3	1	..	..	..	..	..	..	..	..	..	..	33	7.1
	Thirteenth	9	1	4	4	10	3	18	9	11	2	2	..	..	..	..	..	..	..	..	..	..	73	6.3
	Twenty-fourth	6	..	6	3	7	4	12	2	18	3	6	3	4	2	..	..	..	..	..	..	..	76	7
	Twenty-second	1	..	2	4	7	2	14	3	10	6	4	1	1	..	..	..	..	..	..	..	..	55	6.8
	Whitney	9	..	5	4	7	11	15	6	11	7	1	3	2	1	..	..	..	..	..	..	..	82	6.3
	Total	68	13	55	54	87	70	141	63	120	53	35	19	11	3	1	..	..	..	..	..	..	794	

Grade	School	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Total papers	Median
5	Ashland	..	..	..	..	..	..	1	3	2	5	7	8	8	3	5	1	1	..	..	..	..	44	11.5
	Center	..	..	1	..	..	1	..	5	2	4	8	7	2	2	..	..	..	..	..	..	..	32	10.4
	Cleveland	1	..	..	..	2	5	5	4	12	11	14	5	10	9	2	1	..	..	..	..	..	81	10.0
	Ferry	..	..	..	..	2	1	4	2	6	4	6	2	4	3	..	..	..	..	..	..	..	34	9.5
	Fifth	..	..	..	..	1	..	1	6	1	9	13	8	11	10	5	..	..	..	..	..	..	65	11.2
	Maple	..	..	..	..	..	..	..	..	..	5	..	5	5	2	3	..	..	..	..	..	..	20	12
	Niagara	1	1	1	..	1	7	10	13	14	12	9	9	4	1	..	..	..	..	..	..	..	83	8.5
	Sugar	..	..	..	1	1	..	3	5	3	2	3	7	4	5	1	2	..	..	..	..	..	37	11.1
	Tenth	..	1	1	..	3	1	4	5	3	10	14	12	6	3	2	1	..	..	..	..	..	66	10.4
	Third	..	..	..	..	..	..	1	1	1	4	11	3	6	4	1	2	1	..	..	..	..	35	11
	Thirteenth	..	..	..	1	2	4	5	6	16	12	8	8	2	..	..	..	..	..	..	..	..	64	8.9
	Twenty-fourth	..	..	..	..	..	..	2	3	7	7	12	3	17	8	1	..	..	..	..	..	..	60	11
	Twenty-second	..	..	1	..	..	1	1	3	7	10	14	8	9	4	1	2	..	..	..	..	..	61	10.5
	Whitney	..	..	..	1	1	3	6	4	12	6	12	9	8	7	2	1	..	..	..	..	..	72	10.3
	Total	2	2	4	3	13	23	43	60	86	101	131	94	96	61	23	10	2	..	..	..	..	754	

Obviously, the pupils of the Ashland Avenue School third grade who scored 12 and 14 do not have the same language difficulties as the nine children who scored 2 or less. Likewise it is difficult to see how teachers of the fifth grade classes can secure good results from children who could not fill in the blanks correctly of more than two or three sentences of scale C. The scores from the fifth grade of the different schools show that the class in Maple Street School, whose ability ranges from 9 to 14 or a difference of 5 points, is a much easier class to teach than the class of Sugar Street School which ranges from 3 to 15 or a difference of 12 points. When it is considered that the median score for fifth grade classes tested in October should be 11 or above, it becomes evident that most of the schools of the Niagara Falls system have a very important but difficult problem of meeting the language needs of a large number of pupils. Distribution of scores made by other grades shows the same relative difficulties as are indicated by the range of third and fifth grade scores in table 24.

Summary

a The scale used for measuring language ability probably measures only indirectly the results of classroom teaching; it does give a measure of language ability of children who have had 2 or more years of school training.

b The seven grades (3–9) tested fell below the standard that should be expected of children in the same grades when tested during the first half of the school grade.

c Compared with the results obtained from five other school systems, Niagara Falls children received the lowest score in each grade 3 to 8 inclusive.

Recommendations

The first problem is to discover whether the facts indicated in the above summary hold true with other tests.

If these facts prove to be true, then it will be necessary to determine the cause of the language deficiency.

A reclassification of children according to language ability should give teachers a much better opportunity to meet the language needs of individual children.

Composition

One test of language achievement is that of ability to write composition. The subject, "What I Should Like to Do Next Saturday" was assigned to all pupils of grades 4 to 9 inclusive. After pupils had written the necessary data at the top of their paper, the test was explained as follows:

I want to find out today how interesting a story you can write when you try your very best. You may write on both sides of the paper if you wish. I want you to tell me in this composition what you would like to do next Saturday. The topic on which you are to write is written on the board. (The examiner pointed to the subject) "Are there any questions?"

When questions were answered, children were told to "Begin." They were allowed exactly 20 minutes.

Scoring the Papers

When the papers were collected, they were arranged alphabetically and numbered. Only the odd-numbered papers were scored. All teachers met one afternoon and rated the papers. The rating was done by use of the Nassau county supplement to the Hillegas scale. Teachers were divided into teams of three: the three teachers read each paper and recorded the score separately. Later the median of these three scores was taken as the final rating of the paper. Where two teachers agreed, the rating given twice was taken as the final score. Later these papers were read again by a special examiner who has had much practice in using the composition scale. It was found that the ratings given by many teams were quite accurate; but a few teams or groups of teachers had failed to understand or observe the technic of using the scale. The data of table 25 show the difference between the ratings of one set of papers as given by teachers and by the survey committee.

TABLE 25

Giving the teachers' rating, the survey committee's rating and the difference between the two ratings for each pupil's paper

Pupil's number	*Teachers' scores*	*Survey committee's scores*	*Difference in scores*
1	6.0	5.0	1.0
2	6.0	5.0	1.0
3	7.2	6.0	1.2
4	6.0	5.0	1.0
5	5.0	3.8	1.2
6	3.8	2.8	1.0
7	5.0	5.0	0
8	5.0	5.0	0
9	5.0	5.0	0
10	7.2	6.0	1.2
11	5.0	3.8	1.2
12	7.2	7.2	0
13	7.2	6.0	1.2
14	6.0	6.0	0
15	6.0	5.0	1.0
16	5.0	5.0	0
17	6.0	5.0	1.0

The data of table 26 are taken from the corrected scores or ratings given by the survey committee.

TABLE 26

Grade scores in composition for each school and for the entire school system; also the approximate standard scores

School	*4*	*5*	*6*	*7*	*8*	*9*
Ashland	2.7	4.7	4.6	....	....	....
Center	2.4	3.6	5.2	....	....	....
Cleveland	2.9	3.7	4.3	4.8	5.5	....
Ferry	2.4	2.9	5.2	....	....	....
Fifth	2.0	3.5	5.0	5.2	5.4	....
Maple	2.9	3.9	4.8	....	....	....
Niagara	2.4	2.7	4.6	3.8	5.6	....
Sugar	2.4	3.5	3.7	....	....	....
Tenth	2.8	3.7	4.0	5.2	....	....
Third	2.6	3.2	5.0	....	....	....
Thirteenth	2.5	3.0	4.0	....	....	....
Twenty-fourth	2.3	3.4	4.8	4.1	5.5	....
Twenty-second	2.3	4.0	4.6	5.0	....	....
Whitney	2.7	3.0	4.1	....	....	....
High School	....	....	....	....	....	5.9
Median scores	2.6	3.4	4.4	4.8	5.5	5.9
Standard scores	3.5	4.0	4.5	5.0	5.5	6.0

The standards given in table 26 were derived as a result of a number of surveys of city, village and county school systems. Doctor Trabue points out that these standards are higher than the average or median derived from these several surveys but are scores that were reached or exceeded by a few schools for each grade. He suggests that they are standards to be attained rather than medians of past achievement.[1] It will be seen that although the standard scores are ideal rather than the average of actual achievement, grades 6, 7, 8 and 9 of Niagara Falls scored very near to the standard.

The data of table 27 show how Niagara Falls children compare in composition ability with other New York school systems.

TABLE 27

Comparison of composition ability

Showing how the median scores obtained by Niagara Falls children in English composition compare with the median scores obtained by other New York school systems

	Median score attained in grade					
School system	*4*	*5*	*6*	*7*	*8*	*9*
Niagara Falls	2.6	3.4	4.4	4.8	5.5	5.9
3 Elmira	3.4	4.3	4.4	5.4	5.6	5.9
1 Binghamton	2.7	3.28	4.41	4.83	5.62	....
2 Utica	2.41	3.13	3.73	4.64	5.23	....
3 Amsterdam	2.07	2.52	3.37	3.97	4.65	6.21
4 Nassau co.	2.76	3.42	3.82	4.18	4.56	5.00
4 Ethical Culture School, New York City	....	4.01	4.72	5.39	5.74	....
Tentative standard scores	3.5	4.0	4.5	5.0	5.5	6.0

[1] "Supplementing the Hillegas Scale." Teachers College Record. Jan. 1917, p. 79.

It will be seen from table 27 that Niagara Falls children in grades 5 to 9 inclusive compared favorably with children of the same grades of other New York schools in ability to write English composition.

Summary

a Whereas the standards were higher than most schools had achieved up to 1917, Niagara Falls practically reached the standard in all grades above the fifth.

b If Niagara Falls children have less native ability for language work than the average of American school children possess, as was indicated by the Trabue language scale, then Niagara Falls teachers deserve all the more credit for teaching composition.

c It was the judgment of the survey committee that the good record made by Niagara Falls children in composition writing was due in the main to special emphasis that teachers had placed on this subject.

Recommendations

a Children, generally throughout the school system should be encouraged to use their imagination more in composition writing.

b Since a fairly good record has been attained in written composition, particularly in the upper elementary grades, more attention should be given to "oral composition."

Arithmetic

The Woody arithmetic scales, series B, were used to measure pupil achievement in arithmetic. These scales consist of four different tests, one each for addition, subtraction, multiplication and division. Each scale contains about 20 problems, and tests children's ability in the fundamental process through common and decimal fractions, United States money and denominate numbers. The problems are so arranged on each scale that the first represents the very simplest operation, and each succeeding problem is approximately one numerical unit more difficult than the problem preceding it. These facts are shown by the addition scale given on the following page.

Woody Addition scale B

City ..... County ..... School ..... Date .....
Name ..... When is your next birthday? .....
How old will you be? ..... Are you a boy or a girl? .....
In what grade are you? ..... Teacher's name .....

(1)	(2)	(3)	(5)	(7)	(10)
2	2	17	72	3 + 1 =	21
3	2	2	26		33
—	3	—	—		35
	—				—

(13)	(14)	(16)	(19)	(20)
23		9	$ .75	$12.50
25	25 + 42 =	24	1.25	16.75
16		12	.49	15.75
—		15	———	———
		19		
		—		

(21)	(22)	(23)	(24)	(30)
$8.00	547		4.0125	2½
5.75	197	⅓ + ⅓ =	1.5907	6⅜
2.33	685		4.10	3¼
4.16	678		8.673	———
.94	456		———	
6.32	393			
——	525			
	240			
	152			
	——			

(33)	(36)	(38)
.49	2 yr. 5 mo.	
.28	3 yr. 6 mo.	
.63	4 yr. 9 mo.	25.091 + 100.4 + 25 + 98.28 + 19.3614 =
.95	5 yr. 2 mo.	
1.69	6 yr. 7 mo.	
.22	———	
.33		
.36		
1.01		
.56		
.88		
.75		
.56		
1.10		
.18		
.56		
——		

Giving the Tests

The survey committee requested the principals to administer the subtraction and division tests, and with the assistance of their teachers to score those papers. This request was made principally because the Woody scale is one of the easiest of the educational tests to administer and to score, and one of the most valuable so far as using the results is concerned. The survey committee believed that if principals and teachers helped in this original survey of arithmetic that they would be interested and glad to cooperate with the superintendent in making a more comprehensive study of pupil achievement in arithmetic at some later date. Judging by the results from the grades of the different schools, the committee believes that the results for subtraction and division are as reliable as for addition and multiplication.

Standard Scores

Mr Woody's original publication set up certain standards for each of the scales. These standards were based on the results obtained by from 20,000 to 30,000 children. The tests have been so widely used, however, that lately new standards have been published which are perhaps more valuable than the original and so are used in this report. The midyear standard as used in this report is the average of the scores obtained from the use of the B scale in fourteen different cities of the United States as given on pages 22 and 23 of the Teachers College Bulletin, entitled " The Woody Arithmetic Scales." The October standards used in this report are the average of scores obtained in five cities whose pupils were tested in October and November. While the October standards are not entirely reliable they are approximately what we would expect for the latter part of October. All scores are in terms of the number of problems solved correctly.

Niagara Falls Scores

Table 28 shows how the schools of Niagara Falls compare with one another and with the standards of achievement described above.

TABLE 28

Grade scores in addition for each school in Niagara Falls

School	*Grades* 3	4	5	6	7	8
Ashland	10.9	11.9	13.7	15.6	....	....
Center	7.7	12.1	14.2	14.8	....	....
Cleveland	7.7	10.5	13.2	15.1	16.1	16.6
Ferry	7.3	10.9	13.4	16.0	....	....
Fifth	7.1	10.4	13.5	15.2	15.9	16.5
Maple	8.	10.3	14.1	15.3	....	....
Niagara	7.5	11.5	12.9	14.8	16	15.9
Sugar	7.8	10.2	13.1	14.4	....	....
Tenth	7.6	11.2	13.8	15.8	16.4	....
Third	8.2	11.6	14.5	16	....	....
Thirteenth	7.4	11.6	13.1	14.4	....	....
Twenty-fourth	6.8	10.2	12.9	16.0	15.4	16.1
Twenty-second	7.5	10.4	12.6	15.2	15.6	....
Whitney	7.7	11.3	13.6	15.3	....	....
Niagara Falls grade scores	7.6	10.9	13.5	15.4	15.9	16.5
Approximate October standards	8.2	11.6	13.2	15.1	15.7	16.8

TABLE 29

Grade scores in subtraction for each school in Niagara Falls

School	*Grades* 3	4	5	6	7	8
Ashland	6.8	9.6	11.5	13.0	....	....
Center	6.4	8.9	11.8	12.9	....	....
Cleveland	6.6	8.7	10.9	12.2	12.9	14.2
Ferry	7.5	8.2	10.8	11.7	....	....
Fifth	7.4	8.7	11.6	11.9	13.6	14.4
Maple	7	9.2	11.3	12.3	....	....
Niagara	8.8	11	12.3	13.8	14.3	....
Sugar	6.1	8.5	11.4	12.1	....	....
Tenth	....	....	9.2	11.7	....	....
Third	7.2	9.4	12.1	13.1	....	....
Thirteenth	7.7	9.4	11.1	11.7	....	....
Twenty-fourth	7.4	9.3	11.2	12.3	....	....
Twenty-second	7.3	8.5	10.2	13.2	13.4	....
Whitney	5.8	9.1	10.9	12.2	....	....
Niagara Falls grade scores	7.1	9.1	11.15	12.3	13.4	14.3
Approximate October standards	6.8	9.0	10.6	12.2	13.3	13.8

TABLE 30

Grade scores in multiplication for each school in Niagara Falls

School	*Grades* 4	5	6	7	8
Ashland	10.1	12.3	16.0	....	....
Center	10.6	14.2	16.1	....	....
Cleveland	9.4	12.8	15.5	17.0	17.4
Ferry	9.6	10.9	15.2	....	....
Fifth	10.4	12.1	16.1	16.5	16.8
Maple	9.8	13.8	17	....	....
Niagara	9.2	10.6	14.4	15.6	16.4
Sugar	9	12.2	14.7	....	....
Tenth	11.5	11.0	15.8	17.1	....
Third	10	11.4	16.5	....	....
Thirteenth	10.4	11.9	14.3	....	....
Twenty-fourth	10.5	11.4	14.9	15.9	17.4
Twenty-second	9.6	11.5	14.8	16.6	....
Whitney	10.2	12.4	15.4	....	....
Niagara Falls grade scores	10.05	12.1	15.4	16.7	17.25
Approximate October standards	9.5	11.2	14.2	15.2	16.7

TABLE 31

Grade scores in division for each school in Niagara Falls

School	*Grades*				
	4	*5*	*6*	*7*	*8*
Ashland	5.4	7.1	11.1	....	....
Center	7.5	10.2	11.3	....	....
Cleveland	4.9	7.9	10.6	12.0	12.8
Ferry	5.6	6.4	9.6	....	....
Fifth	5.7	9.4	12.9	12.6	13.1
Maple	7.2	9.5	11.8	....	....
Niagara	5.1	8.3	10	11.7	12.7
Sugar	6.4	8.1	10.3	....	....
Tenth	5.6	8.3	....	12.3	....
Third	7	9.2	11.5	....	....
Thirteenth	4.9	7.5	10.4	....	....
Twenty-fourth	5.1	8.7	10.9	12.2	12.2
Twenty-second	5.3	7.8	10.6	12.4	....
Whitney	6.4	9.3	11.7	....	....
Niagara Falls grade scores	5.5	8.65	10.9	12.3	12.9
Approximate October standards	5.7	8.0	10.3	11.6	12.5

Between the schools a wide difference of ability is noticeable in certain grades: third grade addition scores ranged from 6.8 in the Twenty-fourth Street School to 10.9 in the Ashland Avenue School; fifth grade subtraction scores ranged from 9.2 in Tenth Street School to 12.3 in Third Street School; sixth grade multiplication scores ranged from 14.3 in Thirteenth Street School to 17.0 in the Maple Avenue School; fourth grade division scores ranged from 4.9 in two schools to 7.5 in Center Street School. An even greater difference existed between class scores within the same grade.

Compared with the standard scores, Niagara Falls made a very good record as is shown in the following summary:

Addition: Grades 6 and 7 exceeded midyear standard. Grades 5, 6 and 7 exceeded October standard. Grades 3, 4 and 8 were lower than October standard.

Subtraction: Grades 5 and 8 exceeded midyear standard. All grades exceeded October standard.

Multiplication: All grades were above midyear and October standard.

Division: Grades 5, 6 and 7 exceeded midyear standard. Grades 5, 6, 7 and 8 exceeded October standard. Grade 4, only, fell below October standard.

Summary

a Niagara Falls is more successful than the average of schools in teaching the fundamentals of arithmetic.

b Grades 3, 4 and 8 scored lower than the October standard in addition and grade 4 fell below in division; however, these scores are so near the standard that they do not disclose any particular weakness in the teaching of those grades.

c Multiplication is better taught in Niagara Falls schools than addition, subtraction or division.

d The school as a whole did better in subtraction than in either addition or division.

e Niagara Falls teachers have laid such a good foundation in arithmetic that with concentrated, organized effort they can easily make Niagara Falls one of the foremost cities of the State in the arithmetic achievement of pupils.

A Suggested Method of Analyzing Test Results

(See table 32, the class record sheet of a sixth grade group at Tenth Street School)

In order to use the results of the Woody scale successfully it is necessary not only to know how many problems each child solves correctly, but which problems caused the most difficulty and what particular elements or processes of these problems caused the trouble. A teacher who has prepared such a class record as is contained in table 32 can see at a glance which problems were solved correctly by all her class and which problems caused the most difficulty. For instance, she can see that problem:

37 — $2\frac{1}{2} \times 4\frac{1}{2} \times 1\frac{1}{2}$ — was omitted or missed by 84 per cent of class.

38 — .0963$\frac{1}{8}$
.084 " 81 per cent "

35 — 987$\frac{3}{4}$
25 " 54 per cent "

33 — $2\frac{1}{2} \times 3\frac{1}{2}$ " 51 per cent "

26 — 9742
59 " 46 per cent "

29 — $\frac{1}{8} \times 2$ " 35 per cent "

27 — 6.25
3.2 " 21 per cent "

18 — 24
234 " 21 per cent "

After finding which problems have caused failures the next question to determine is what process or elements of each problem caused the trouble. Table 32 shows that 15 of the 37 pupils tried

problem 26 and failed to solve it correctly. An analysis of the mistakes shows that 2 pupils failed in addition, 2 made mistakes in multiplying by 9 and the remaining 11 failed to multiply by 5. With these facts before her, the teacher can quickly find out why these 11 pupils did not multiply by 5 but left the problem to go on trying others.

Problem 33 ($2\frac{1}{2} \times 3\frac{1}{2} =$) was missed by 16 pupils of the 37. An analysis of the results shows that 2 pupils in multiplying the denominators, 2×2, secured 2 as a product; 2 pupils considered the numerators as 21 and 31 respectively; 2 pupils multiplied the whole numbers and the fractions together separately and added the products; 4 secured 7 as the answer; 3 secured $1\frac{1}{2}$ as the answer; 2 multiplied 2×3 securing 6 as the product but ignored the fraction; 1 secured 3/7 as the answer; 1 pupil did not reduce to simplest terms.

One wonders by what peculiar mental process so many pupils secured 7 or $1\frac{1}{2}$ as an answer. One pupil gave a clue to the latter part of the question. His solution showed that he had multiplied 2 by 3 taking the product as the numerator and then multiplied 2 by 2 to secure 4 as the denominator. His resulting fraction, 6/4, when reduced gave $1\frac{1}{2}$. When the teacher has secured such information as this it becomes an easy matter to correct the queer mental process that caused children to make such errors.

TABLE 32

Woody arithmetic — multiplication scale B

Sixth grade of Tenth Street School

Pupil's Number	Scale number of problems																		
	1	3	4	5	8	9	11	12	13	16	18	20	24	26	27	29	33	35	37	38
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	..	0
2	1	1	1	1	1	1	1	1	1	1	0	1	..	..	..	..	1	..	..	..
3	1	1	1	1	1	1	0	0	1	1	1	1	1	0	1	..	..	0	..	..
4	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	1	..	..
5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0
6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	0	0
7	1	1	1	1	1	1	1	1	1	0	1	1	1	0	1	1	0	1	0	..
8	1	1	1	1	1	1	1	1	0	1	1	1	1	0	1	1	1	1	0	1
9	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	0	1	0	0
10	1	1	1	1	1	1	0	1	1	0	1	1	0	1	1	1	1	0	1	0
11	1	1	1	1	1	1	1	1	1	1	0	1	1	0	1	1	0	1	..	0
12	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	..	0	0	0
13	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
14	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	..	0
15	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	0	0	1
16	1	1	1	1	1	1	1	1	0	1	1	1	1	0	0	1	1	1	0	..
17	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	0	0	0	0
18	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	0	1	..
19	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1
20	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	0	0
21	1	1	1	1	1	1	1	1	1	1	0	1	1	1	0	0	0	1	..	..
22	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	0	0
23	1	1	1	1	1	1	1	1	1	1	0	1	1	0	1	1	0	0	0	1
24	1	1	1	1	1	1	1	1	1	1	0	1	1	0	1	1	1	1	..	..
25	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	..	0	..
26	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0
27	1	1	1	1	1	0	1	1	1	1	0	1	0	1	0	1	1	0	1	0
28	1	1	1	1	1	1	0	1	1	1	1	1	1	0	1	1	1	1	..	..
29	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	0	0	1	..	..
30	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0
31	1	1	1	1	1	1	1	1	1	0	1	1	0	0	1	0	1	1	0	0
32	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1
33	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	0	0
34	1	1	1	1	1	1	1	1	1	0	1	1	1	0	1	1	1	0	0	0
35	1	1	1	1	1	1	1	1	1	0	1	1	1	0	1	1	0	0	0	1
36	1	1	1	1	1	0	1	1	1	1	0	1	1	1	1	..	..	1	..	0
37	1	1	1	1	1	1	0	1	1	1	1	0	1	0	0	0	0	0	0	0
Number rights	37	37	37	37	37	34	34	35	35	32	29	36	30	21	29	24	18	17	6	7
Number wrongs	0	0	0	0	0	3	3	2	2	5	8	1	6	15	7	10	16	18	20	18
Not tried	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	3	3	2	11	12
Total per cent missed and omitted	..	..	..	..	..	8	8	5	5	13	21	3	19	43	21	35	51	54	84	81

Recommendations

a Teachers should discover by use of these and other tests which types of problems and which arithmetical processes cause their pupils most difficulty and then should eliminate these difficulties.

b More drill or emphasis should be given to teaching of division.

c Supervisory officers should discover why classes in some schools score very much higher in one process and much lower in another process. The caprice of the classroom teacher should not be allowed to overdrill pupils in addition or multiplication at the expense of subtraction or division.

d An organization of teachers and supervisory officers might readily be perfected to make a continuous study of subject matter and methods of teaching arithmetic through the use of standardized and informal tests as suggested in the method described above.

e The methods of testing and studying the teaching of fundamentals, as described in this report, should be applied to the teaching of other phases of arithmetic; for example, solving of problems requiring reasoning ability.

Handwriting

Samples of handwriting were collected from all pupils in grades 3 to 9 inclusive according to the following directions:

Directions for Giving and Scoring Handwriting Test

To Teachers:

In order that a uniform method be used throughout the city, please follow carefully the directions given below:

Collect samples of handwriting during the week October 13–15.

Each teacher of grades 3 and 4 should write on the board the lines:

"Mary had a little lamb
With fleece as white as snow
And everywhere that Mary went
The lamb was sure to go."

Each teacher of grades 5, 6, 7, 8 and 9 should write on the board in front of the room the first three sentences of Lincoln's Gettysburg Address.

As preliminary preparation, the pupils should read and copy this until they are thoroughly familiar with it and practically know it by heart. For the final test, the teacher should have a watch with a second hand, and all pupils should begin to write at exactly the same instant. They should write precisely for 2 minutes.

Writing should be in ink and on ruled papers. Each paper should bear the name of the pupil, the name of the school, the grade, whether A or B division and the teacher's name.

Pupils should be instructed to write the above lines over and over again until told to stop. Papers will be scored for both speed and quality. The count of the letters of each copy on opposite page of this sheet will aid in scoring for speed. The teacher should mark on each paper, in the upper right-hand corner, the number of letters written by the pupil in the 2 minutes.

The superintendent will designate a place and time where all teachers can meet with the survey committee to score these papers for quality; each teacher will please bring the papers of her class to such meeting.

Each teacher determined the *rate* scores for the papers of her class. The Ayres "Measuring Scale for Handwriting, Gettysburg Edition" was used to determine the quality scores. All teachers met with the survey committee. Each paper was scored by three teachers; and the median of the three scores was taken as the final quality score of the paper. The scores given in table 33 are the results obtained from the ratings given by teachers to the individual papers.

TABLE 33

Handwriting scores

Giving the "rate" and "quality" scores for each school, and for the school system as a whole, as determined by the Ayres "Measuring Scale for Handwriting"; also showing how these scores compare with the Ayres standard scores

	3		4		5		6		7		8	
School	*R*	*Q*	*R*	*Q*	*R*	*Q*	*R*	*Q*	*R*	*Q*	*R*	*Q*
Ashland	41	48	43	60.5	64	63	72	62	....	....	....	....
Center	41	39	42.5	56	73	47	84	65	....	....	....	....
Cleveland	45	43	64.5	49	69	51	78	55	84.5	60	88.5	58
Ferry	35	52	53	53	104	51	84	65	....	....	....	....
Fifth	42	49	56	41	69	52	78	53	87	70	83.5	71
Maple	35	50	51.5	44	..	..	53.5	45	....	....	....	....
Niagara	41.5	37	47	55	81	49	78	62	83	63	100	69
Sugar	45	49	42	53	67	50	68	65	....	....	....	....
Tenth	40	34	43	41	70	53	91.5	66	75.5	63	....	....
Third	44	43	51	44	59	56	65	68	....	....	....	....
Thirteenth	38.5	51	67	58	80	40	88.3	62	....	....	....	....
Twenty-fourth	36.5	43	47	44	53	64	67.5	57	83	39	85.5	48
Twenty-second	47.5	46	44.5	59	66	65	83	63	94	74	....	....
Whitney	34.5	57	50.5	63	73	55	43.5	63	....	....	....	....
Grade medians	42	47.5	45.5	52.5	71	52	75	62.5	87	70.5	87.5	61.5
Ayres grade standards	44	42	55	46	64	50	71	54	76	58	79	62

The data of table 33 show that in Niagara Falls the rate scores of grades 3 and 4 are below the standard; and of grades 5, 6, 7 and 8 are above. The scores for quality are above the standards for each grade.

It should be kept in mind that these samples were collected by teachers with only the typewritten directions as a guide, and that the scoring for quality was done after brief instructions and very little practice. A longer practice period by teachers upon specimens of known value, and a longer period for scoring papers would have given more reliable results. It is probable, too, that a careful checking of the ratings given would have lowered the results indicated in table 33.

The National Intelligence Tests

When a school system, a school, a class, or individual child is found to have a very high or a very low score, on an educational test, there is an indication that such school, class or individual needs unusual treatment or attention. The unusual score or rating may be due to anyone or a combination of several causes; for example, the quality of teaching, the native ability of the children to do school work, the attendance of children at school, health conditions or general home conditions. Perhaps the first two of these factors exert the most influence on class or school scores.

For the past several years, psychologists have been developing tests for measuring the intelligence of children and adults; by intelligence is usually meant the native ability of children to learn or to achieve

what the school offers. One of the best of these tests for measuring by groups the native ability of children to do school work, or briefly, their general intelligence is the " National Intelligence Scale."

Form A of this scale was used to test all pupils of the sixth grade in Niagara Falls schools; and in addition was given to all pupils above the third grade in two typical schools, the Tenth Street School and the Twenty-second Street School. These tests were administered by members of the survey committee to all classes tested except the small sixth grade class of the Maple Street School. The papers were scored under the direction of the survey committee — each paper being scored by one examiner and his scoring checked by a second examiner. The utmost care was taken to make the giving of the tests and the scoring of the results entirely free from error of any kind.

The scale values range from 0 to 196. The distribution of scores made by the sixth grade pupils of the fourteen elementary schools of Niagara Falls is given in table 34.

TABLE 34

Sixth grade scores, national intelligence scale

Showing the distribution of scores on the national intelligence scale, form A, made by the sixth grade pupils of the fourteen elementary schools, the median score made by the sixth grade of each school, and the rank of each school in the ability of its sixth grade pupils to do school work

School	*Total number of pupils scoring*															*Total no. of pupils*	*Median score*	*Rank*
	0 29	30 39	40 49	50 59	60 69	70 79	80 89	90 99	100 109	110 119	120 129	130 139	140 149	150 159	160 169			
Ashland	....	....	....	....	....	1	3	4	8	8	8	5	2	....	....	39	114	1
Center	....	....	....	....	....	2	8	3	10	5	1	....	....	....	....	29	101	8.5
Cleveland	....	....	....	2	1	8	10	16	16	15	6	2	1	....	....	77	101	8.5
Ferry	....	....	1	1	1	6	7	6	5	3	2	....	....	....	....	32	90	12
Fifth	....	....	....	....	1	3	8	11	9	6	13	4	....	....	....	55	105	3
Maple	....	....	....	....	....	....	1	4	3	4	3	....	....	....	....	15	109	2
Niagara	....	2	2	3	5	8	13	8	12	5	4	....	1	....	....	63	89	13
Sugar	....	....	1	....	....	2	2	11	5	5	....	1	1	....	....	28	98	10.5
Tenth	....	....	....	1	2	....	6	5	10	4	3	4	1	1	....	37	104	4.5
Third	....	....	....	....	....	....	4	7	6	6	1	1	2	....	....	27	104	4.5
Thirteenth	....	....	....	1	3	8	7	9	2	2	1	....	....	....	....	33	86	14
Twenty-second	....	....	2	....	3	7	4	5	14	10	5	....	....	....	....	50	103	6
Twenty-fourth	....	....	....	....	1	4	3	6	2	5	1	1	1	....	....	33	102	7
Whitney	....	....	....	....	....	4	7	14	7	4	2	3	1	....	....	37	98	10.5
Totals	....	2	6	8	17	53	83	104	118	82	50	21	10	1	....	555	.....	.....

Median 100.4

The median score of the 555 sixth grade pupils is 100.4. The median scores for schools range from 86 to 114. This difference in the ability of the different sixth grade groups is better illustrated by figure 4 which shows the rank of each group in graphic form.

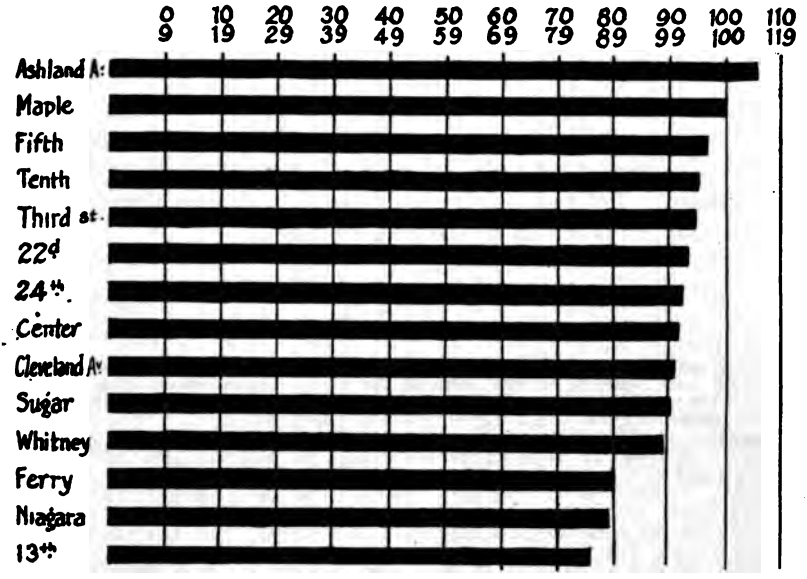


FIGURE 4 — Showing how the fourteen elementary schools compared in the median ability of sixth grade pupils to do school work

Another important problem set forth in the data of table 34 is the wide range of ability of pupils in the same grade of the same schools. The ability of sixth grade pupils of the Cleveland Street School ranges from 50 to 140, or a difference of 90 points; of the Niagara Street School from 30 to 140 or a difference of 110 points. In contrast with these two illustrations, the scores of Center Street School range only from 70 to 120, and of Maple Street School from 80 to 120 or differences of 50 and 40 points respectively.

The facts set forth above raise exceedingly important questions:

1 Can the sixth grade group whose median ability is only 86 achieve as much in a school year as the group whose median score is 114?

2 The median score of the 14 groups combined is 100. Should the group with median score of 86 be expected to achieve as much as the average? Should the group with median ability of 114 be expected to achieve more than the average? How much less in the one case? and how much more in the other?

3 Should pupils scoring less than 80 be given the same instruction as pupils scoring above 120?

4 If the teacher makes an assignment suited to the needs of the average pupils, that is, those scoring from 80 to 120, will the pupils who scored from 35 to 75 be able to do the work assigned? To what extent will they understand the assignment? What should the teacher expect of them? On the other hand, will the work assigned be sufficient for those pupils rating 125 or above? or will they have time for loafing and so learn bad habits of work?

5 What answers will teachers and school officials give to the above questions? When they have answered, what can they do to improve the situation? The problem is even more difficult than the foregoing data indicate, as is shown by the data of table 35.

TABLE 35

Intelligence scores by ages of sixth grade pupils

Showing the number of pupils and the median score, as determined by the national intelligence scale, form A, of each half-year age group constituting the sixth grade of Niagara Falls. (10 yrs. means all pupils 9 yrs. 9 mos. to 10 yrs. 3 mos., when tested; 10½ yrs. means all pupils 10 yrs. 3 mos. to 10 yrs. 9 mos., etc.)

Age groups	10	10½	11	11½	12	12½	13	13½	14	14½	15	15½	16	16½	17
No. of pupils[1]	8	17	5	72	63	47	80	33	36	24	28	27	6	2	0
Median score	98	106	108	107	107	106	91	99	91	85	92	92	75	80	..

Table 35 throws further light on the problem raised by table 34, namely, the difficulty of teaching in the same class, pupils who differ widely in their ability to learn. The eight pupils only 10 years old who had reached the sixth grade in October 1920 made a median score of 98; the 255 pupils from 10 years 3 months to 12 years 9 months inclusive had median scores of 106 to 108; the 228 from 12 years 9 months to 15 years 9 months had median scores of respectively 91, 99, 91, 85, 92, 92; the 16 and 16½ year old children had median scores of 75 and 80. These children in the sixth grade who were 13 or more years old, present a twofold difficulty for teachers and supervisory officers to solve: (1) the test records show that they do not have ability to do the same work that the 11 and 12 year old children can do; (2) on account of their age, they will soon be leaving school, so that whatever is done for them by the school must be done quickly. These children 13 years old or more, will soon be leaving school. What does Niagara Falls intend to do for them in the short time they will remain in school?

[1] Due to apparent errors in recording ages and birthdays, the papers from sixth grade classes of Sugar Street and Maple Avenue Schools, and 16 papers from other schools were omitted from the age distribution; the above table includes 496 of the 555 sixth grade pupils tested.

The difficulties and problems presented in the discussion of the sixth grade pupils, applies to other grades also, as is shown in table 36.

TABLE 36

Distribution of scores, national intelligence scale

Showing the distribution of scores made by pupils of grades 4–7 of the Tenth Street and the Twenty-second Street Schools; the total number of pupils tested; and the median score of each grade group

Grade	*School*	0 4	5 9	10 14	15 19	20 24	25 29	30 34	35 39	40 44	45 49	50 54	55 59
4	Tenth	..	..	..	..	1	1	2	3	5	3	3	5
	Twenty-second	..	..	..	..	1	1	2	3	3	..	4	2
5	Tenth	..	..	..	..	1	..	..	1	3	2	1	2
	Twenty-second	..	..	..	..	..	..	..	1	1	..	2	2
6	Tenth	..	..	..	..	..	..	..	..	..	..	1	..
	Twenty-second	..	..	..	..	..	..	..	..	..	2	..	..
7	Tenth	..	..	..	..	..	..	..	..	..	..	..	..
	Twenty-second	..	..	..	..	..	..	..	..	..	..	..	..

Grade	*School*	60 64	65 69	70 74	75 79	80 84	85 89	90 94	95 99	100 104	105 109	110 114	115 119
4	Tenth	10	7	9	6	3	3	4	..	2	...	...	...
	Twenty-second	5	8	8	5	7	4	..	2	...	...	1	...
5	Tenth	3	3	4	8	4	8	9	7	2	...	2	1
	Twenty-second	8	2	7	9	5	11	4	5	1	1	...	...
6	Tenth	..	2	..	..	3	3	1	4	6	4	4	...
	Twenty-second	..	3	1	6	..	4	2	3	6	8	6	4
7	Tenth	..	2	2	..	..	..	1	3	1	2	3	4
	Twenty-second	..	..	..	2	..	1	1	1	3	1	1	3

Grade	*School*	120 124	125 129	130 134	135 139	140 144	145 149	150 154	155 159	160 164	*Total*	*Median*
4	Tenth	...	...	...	...	...	...	...	...	...	67	65.5
	Twenty-second	...	...	...	...	...	...	...	...	...	56	69.5
											123	67.5
5	Tenth	2	2	...	...	...	...	...	...	...	65	85.5
	Twenty-second	1	1	...	...	...	...	...	...	...	61	79
											126	81.5
6	Tenth	3	...	2	2	1	...	...	1	...	37	104
	Twenty-second	2	3	...	...	...	...	...	...	...	50	103.5
											87	103.5
7	Tenth	2	3	2	3	2	1	...	...	...	31	117
	Twenty-second	2	6	2	4	...	2	1	1	...	31	125.5
											62	120

A comparison of the scores made by Niagara Falls children of Tenth Street and Twenty-second Street Schools with scores made by pupils of other school systems is given in table 37.

TABLE 37

Comparison of grade scores from national intelligence scale

School system	*4*	*5*	*6*	*7*	*8*
Niagara Falls	68	82	104	120	....
Four New York school systems	65	88	105	120	128
A-division of Washington schools[1]	63	67	104	118	138

The data of the above table indicate that the four grades of the two schools tested in Niagara Falls have about the same native ability to do school work as do the same grades of other schools.

[1] The data from Washington schools are expressed in averages and do not admit of strict comparison with the New York data expressed in terms of medians.

Another question to be determined before judging the pupil achievement of a school system is whether the children of each age-group compare favorably in ability to learn with children of the same age-group from other school systems. Table 38 answers this question for Niagara Falls.

TABLE 38

Comparison of age norms, national intelligence scale

Showing how the children of Niagara Falls, grades 4–7 in two typical schools compare in ability to learn, with children of other school systems, when compared by age norms

	Median scores attained by pupils of age[1]												
School system	9	9½	10	10½	11	11½	12	12½	13	13½	14	14½	15
Niagara Falls	36	67	73	73	88	84	96	100	88	100	105	78	88
Four New York cities	60	69	76	78	90	90	94	105	107	102	106	110	102
Provisional age standards..	78	...	91	...	103	...	113	...	123	...	131	...	137

The data of table 38 show that the pupils of grades 4 to 7 in the two schools tested did not score quite so high on this intelligence scale as did pupils of the same age groups of four New York school systems. These data are given as an illustration of a type of study that school officials need to make of their schools in order to judge accurately the needs and achievement of their pupils.

Summary

a A so-called intelligence scale should be thought of as a test used to measure the ability of children to learn or to achieve. In some sense it may be a measure of ability to achieve success both in school work and outside of school.

b The median scores of the sixth grade groups show a great difference in the ability of children of different schools to achieve.

c The overage or retarded pupils have much less ability than the pupils of normal age to achieve success in school work; and, on account of their overage, have a very short time left to remain in school.

d There is great need of classifying pupils for instructional purposes according to their physical and mental development, and of adapting instructional method and subject matter to their special needs.

e Since all pupils of the sixth grade, class of 1920–21, were tested with the national intelligence test, the individual records would furnish a valuable basis for classifying pupils in the seventh grade according to their ability to do the work of the seventh grade.

[1] In the above table, data for all ages below 9 and above 15 are omitted because children entering the first grade at 6 years of age would not normally reach the fourth grade earlier than the ninth year of age; likewise children older than 14 years in the seventh grade would be one or more years retarded.

f The age factor should be considered, also, in classifying pupils for instructional purposes; that is, two boys, one 12 years old and the other 15 years old, scoring 100 on the national intelligence test should be placed in different sections because the younger boy is capable of progressing through school so very much more rapidly than the older one.

Correspondence between Results of Group Intelligence and Standardized Educational Tests

The relation or correspondence between the results of these two types of tests are of interest and of very great value to those responsible for the teaching of children.

Table 34 gave the median score and rank of each of the fourteen elementary schools according to the ability of sixth grade pupils tested by the national intelligence scale, form A. Table 39 shows how the sixth grade of each school ranks on each of the tests given as compared with all the other schools.

TABLE 39

Comparison of school ranks

School	*Rank gained by sixth grade on*					
	National intelligence scale	*Trabue language*	*Comprehension reading*	*Composition*	*Spelling*	*Arithmetic*
Ashland	1	1	1	8	8	4
Maple	2	2	9	5	3	2
Fifth	3	3	5	3.5	3	3
Tenth	4.5	6	3	13	1	14
Third	4.5	5	5	3.5	6	1
Twenty-fourth	6	7.5	7.5	6	3	7
Twenty-second	7	4	10	8	10	8
Center	8.5	10	7.5	1	12.5	5
Cleveland	8.5	7.5	5	10	10	9
Sugar	10.5	9	12	14	10	12
Whitney	10.5	11	2	11	14	6
Ferry	12	12	12	2	12.5	11
Niagara	13	14	12	8	5	10
Thirteenth	14	13	14	12	7	13

The closest correspondence between test results, as indicated by the ranking of schools in table 39, is for the Trabue language and the national intelligence scale. Four schools hold the same rank in both tests; five change rank by one place or less; four change by two places or less, while only *one* school changes rank position by as much as three places. Ranks as to achievement in the writing of composition differ more widely from the group intelligence ranks than the ranks from any other of the educational tests. In order of closeness of correspondence with the ranks obtained from the group intelligence tests, the educational tests are as follows: (1) Trabue

language scale, (2) comprehension, Monroe silent reading test, (3) Woody arithmetic, (4) spelling, (5) composition.

Assuming that all the test records entering into table 39 are accurate measures of the specific abilities each is supposed to measure, then the difference in quality of teaching would be the prime factor causing a school or class on any achievement test to rank higher or lower than it did in general or group intelligence. To illustrate, specifically, Ashland School ranks 1 on the group intelligence test and 8 in spelling. This would indicate that Ashland Avenue School pupils have not achieved so much in spelling, compared with the achievement of other schools, as the general ability of the pupils would warrant. On the other hand, Niagara Street School ranked 13 in general intelligence and 5 in spelling, which would indicate that the spelling achievement of pupils in this school is much greater than their general ability would lead one to expect.

A study of the ranks of the different schools shows that Fifth Street School had nearly the same rank in each test; this indicates a careful supervision that does not allow too much or too little emphasis on any important subject.

Diagnosis of Individual Pupils

Principals and teachers find it valuable to record the scores made by a class on one sheet; such a record shows that a few pupils who score high on the intelligence test score high on each of the educational tests, and that others who score low on the one test score low on all the others. In classifying pupils for instructional purposes, those pupils who maintain a relatively high position on all tests should be required to do more work than the average of the class, while those who maintain a relatively low rank should not be expected to do all the work assigned for the average. The pupils who attain high scores in part of the tests and low scores in other tests, present a more difficult problem. Teachers will need to give much attention to their specific needs.

TABLE 40

Class record sheet — all tests

Giving the scores made on each of five tests, by each pupil of a sixth grade class in the Twenty-fourth Street School

Pupils' No.	Name	Intelligence test	Arithmetic A	Arithmetic S	Arithmetic M	Arithmetic D	Language	Reading comprehension	Spelling
1	C. C.	64	15	14	..	11	6	10	60
2	C. D.	105	12	12	..	10	12	13	90
3	J. G.	86	17	16	10	5	7	9	65
4	W. G.	109	17	18	..	11	11	33	30
5	B. G.	99	15	15	..	8	11	18	80
6	F. G.	102	..	12	13	11	9	18	95
7	K. K.	92	16	14	13	12	12	12	90
8	D. M.	142	15	16	12	11	15	22	95
9	W. S.	101	17	13	..	13	12	19	90
10	J. S.	80	..	..	12	10	9	9	75
11	W. T.	114	16	13	13	13	14	20	100
12	R. W.	105	16	17	12	12	14	16	60
13	H. W.	115	11	..	11	9	11	15	45
14	J. W.	108	15	..	16	10	12	14	75
15	A. A.	93	13	17	11	13	8	13	95
16	L. B.	76	18	14	..	5	9	17	60
17	I. B.	109	13	13	11	7	11	20	100
18	T. B.	73	15	15	11	6	11	16	85
19	M. D.	71	17	16	..	13	7	17	75
20	D. D.	138	16	14	11	11	13	21	90
21	R. D.	114	16	13	10	8	11	22	100
22	M. D.	95	18	14	..	9	12	15	90
23	C. H.	89	15	16	..	12	11	15	60
24	L. K.	79	16	14	12	10	11	16	95
25	A. M.	94	17	12	11	13	14	18	80
26	D. M.	114	12	15	..	10	10	16	95
27	E. P.	106	14	12	13	9	11	19	80
28	A. R.	113	16	18	..	11	11	8	100
29	L. P.	127	18	16	13	10	10	39	95
30	C. W.	107	16	16	13	11	12	21	90

Summary

a Pupils of grades 3 to 9 inclusive were tested in spelling, silent reading, composition, arithmetic, language and writing. All sixth grade pupils of the city, and all pupils above the third grade in two typical schools, were tested with the national intelligence scale.

b The median grade scores for the city as a whole, indicated that the children of the grades tested were below the standard or average of achievement in other school systems, in general language ability and in rate and comprehension of silent reading; but that they were somewhat above the average in the fundamentals of arithmetic and in writing of composition. The spelling grade scores for upper grades were near the standard but were very much lower than should be expected in grades 3 and 4.

c The group intelligence tests showed a wide difference in median or average ability of the sixth grade groups of different schools to do school work, and showed that in some schools there was such a wide difference in the ability of individual pupils of a class as to make satisfactory teaching almost impossible. The study of the two typical schools showed that this wide range in ability between classes and individuals applies to other grades than the sixth.

Recommendations

1 The results obtained from educational and group intelligence tests should be used as a basis of supervision.

a Teachers should receive the records of their classes and the scores of individual pupils.

b Teachers and supervisory officers should check the results of each test of the individual child against his school achievement, in order to learn as much as possible of his needs.

c Supervisory officers should discover the methods of teaching that have produced good test results and should see to it that these methods are considered and generally understood by all teachers.

d The initiative of teachers in developing or improving their methods or technic should be encouraged by making the results of their study and work generally known.

2 Pupils should be classified for instructional purposes according to their ability to learn.

a This classification for each pupil should be made on the basis of (1) his physical age, (2) his score on a group intelligence test, (3) his scores on two or more good educational tests such as arithmetic and reading.

b Where there are three or more sections of a grade in one building, the classification could profitably be made by sections or classes.

c Where there is only one section of a grade to a school, then the teacher can profitably classify into small groups. Preferably, pupils should not know on what basis this classification was made; and it might differ for different subjects.

3 Classification of pupils according to ability should be made only when teachers who are to take the slow or dull, and the bright or accelerated groups are interested and desirous of modifying their methods and teaching technic to suit the needs of the particular group with which they are to work.

4 A careful study should be made of the ability or intelligence of all pupils in the first five grades of Niagara Falls; those pupils who are three or more years retarded or mentally underage should be grouped in " special classes " for instruction.

5 The new junior high school should make thorough provision for meeting the needs of overage and underage pupils promoted from the fourteen elementary schools.

10

HEALTH EDUCATION

The administration of the program of health education in the city of Niagara Falls is organized under two bureaus, one of which may be called medical inspection and the other physical education.

The staff which conducts the medical examinations and tends to the follow-up work in the schools consists of one medical inspector of schools, four assistant medical inspectors and four nurses. The medical inspector of schools is the city health officer and is employed by the municipal authorities. He is designated by the board of education as medical inspector of schools but is paid no salary by the education authorities.

The work in physical education is under the immediate direction of the superintendent of schools and includes one supervisor of physical education and two special physical education instructors.

Medical Inspection

The city health officer, who is also the medical inspector of schools, has immediate direction of the medical inspection program throughout the school system. He receives an annual salary as health officer of $3000 which is paid by the city. He is paid no salary by the board of education. It is stipulated in his contract with the city that he shall perform the duties of medical inspector of schools. The board of education appoints the health officer of the city as chief medical inspector of schools without salary.

There are four assistant medical inspectors of schools. These four assistant medical inspectors are employed by the board of education at a compensation of $40 a month or $400 each for the school year. The total amount paid by the board of education for the services of the four part-time school medical inspectors is $1600.

No definite time is devoted to school service by the chief medical inspector of schools. He maintains one central office in which he administers the affairs of the health department of the city and those of school medical inspection. He also has a private office in the same building in which he specializes in X-ray work. His time is therefore divided among these three fields of activity. Under this plan, only a small portion of his time can be devoted to actual school medical inspection.

Each assistant school medical inspector is expected to devote one hour a day for five days a week to school medical inspection. It remains to each assistant inspector to determine when this service shall be rendered. Three schools are assigned to each assistant medical inspector while the two remaining schools are looked after by the chief medical inspector. There is no definite time schedule or program required of any school physician. The annual report of the school medical inspector for the year 1918–19 indicates that the total number of hours spent in school by the entire staff of school physicians was 145. The number of inspections was 329. The total number of physical examinations made was 4876. There were also 20 house calls. The smallest number of hours spent in school during the school year by any school physician was 19. The largest number was 34. One of the school physicians made 1435 physical examinations; another made only 359. It is probably unreasonable to expect more thorough attention to this phase of the school health program until the dual organization which now obtains has been corrected. It is unfortunate that the school medical inspector is not directly responsible to the local school authorities.

There are four full-time school nurses, three of whom are employed by the board of education. The fourth school nurse is paid by the municipal authorities. The school nurses are employed for 12 months with a three weeks' vacation for each nurse. They are on duty for 6 hours of each school day and are subject to call if needed on Saturday mornings. The schools are grouped with certain schools assigned to each nurse. Previous to the past year there were only three school nurses. Appreciating, however, the need of additional service of this character another nurse was added to the staff. Definite school and day assignments are made by the chief school medical inspector. The school nurses receive their instructions from the chief school medical inspector and submit their reports to him at the central office.

A school dental dispensary is maintained by the board of education in the building occupied by the chief school medical inspector. A dentist is paid for three hour service on Saturdays for 10 months of the year. This service cost the board of education during the past year $340. The equipment of the dental dispensary belongs to the school authorities. Supplies for the dispensary are purchased by the board of education. A report for the past year shows that 220 children were in attendance at the dental clinic, that there were 185 fillings, 180 treatments and 114 extractions. For the coming year the board of education has provided for the full-time service of a

dentist at an annual salary of $1800. It often happens that excellent results are secured by the employment of a full-time dental hygienist. Possibly such service might be even more resultful than the present plan if there were at the same time attention to follow-up and corrective work in mouth hygiene.

Undernourished Children

An examination that was made of 3845 health records showed that 819 children, or approximately 20 per cent, were 10 per cent or more underweight. This work is now being followed up in the school system for the purpose of organizing a definite plan for meeting the problem. If the same percentage should prevail there would be found approximately 1400 children who are undernourished or underweight 10 per cent or more.

Special attention is now being given, as noted below, to the nutrition of the children in the open-air room and plans are under way for serving milk to the undernourished children in some of the other schools. As soon as the study has been completed it is the plan of the board of education to organize a definite method of meeting this problem throughout the entire school system. No systematic effort is being made at the present time to meet this situation.

Open-air Room

An open-air schoolroom was organized in September 1919 in the Ashland Avenue School. It was made by dividing a large room and readjusting the windows. It has a capacity of 20 children and has been full from the start. The work has been popular with both parents and pupils. At the expiration of the first term 7 of the 20 children had so increased in their weight and general condition that it was thought advisable to return them to their regular classrooms. These 7 children made an average gain of 11.07 pounds in 5 months, while one pupil gained 18 pounds. The other 13 children made an average gain of 7.54 pounds in 5 months. All the children gained both physically and mentally.

The children in the open-air room come from all parts of the city. Their carfare is paid by the board of education if they come from an unusual distance. About 9.30 in the morning, cereal (usually puffed wheat or puffed rice) and milk are served. The food served at noon includes soup, meat or fish, mashed potato and another vegetable (sometimes an egg salad) and for dessert a choice of prunes, jello or other pudding. About 8 quarts of milk are used daily.

The children rest from 1.30 to 2.30 daily. A cot and blanket are provided for each child. The window shades are drawn and the teacher reads to the children for the first 15 minutes. Hot chocolate is provided at 3.15 and the children are dismissed immediately thereafter. The tables at which the children eat are covered with white oilcloth. Outdoor exercise is also a part of the daily program. They are weighed every Tuesday and a weight chart is kept for each child. The daily cost of the food is approximately 25 cents per capita.

It is also planned to provide milk for the undernourished children in other schools beginning with the next school year. Milk will be free to the children whose parents can not afford to pay the cost. Funds for this purpose will be supplied by the board of education.

Administration of School Medical Inspection

The administration of the school medical inspection program is, as has been noted, entirely in the hands of the medical inspector of schools who is at the same time the city health officer. He issues all directions to the assistant medical inspectors and to the school nurses, and all reports as to the services rendered and results accomplished are submitted to him at his central office. Although he submits a monthly and annual report to the superintendent of schools as to work done, there is a serious lack of understanding and cooperation between the school medical inspector and the school authorities. Though some good results are being accomplished, the present dual plan creates an unfortunate confusion of responsibility of administration and is ineffective in the larger results that should be obtained from this service.

At a meeting of the board attended by one of the state representatives in connection with the progress of the survey a report was submitted by the school medical inspector to the board of education quite independent of any responsibility to the superintendent of schools. A school medical inspector should not function in this manner. The school health program should be under the general direction of the superintendent of schools no less than any other phase of the school activities. This situation must be corrected if the best results in this work are to be secured.

Several of the blank forms used by the medical inspector of schools indicate the emphasis that is placed on school medical inspection as a function of the city bureau of health. Other forms have on them the name of the department of education. The forms not only illustrate the dual authority which obtains, but also indicate the manner in which the work is followed up through office records. The forms

OPEN-AIR CLASS. ELEMENTARY SCHOOL
Typical of the progressive school program

ONE OF THE OPEN-AIR CLASSES AT LUNCH

used are: (1) health certificate, (2) notification to parent or guardian, with copy for school nurse, (3) appointment card for school dentist, (4) daily report of school nurse, (5) daily report of school examiner. This irregularity of forms also contributes to the confusion in the minds of even teachers as to what department directs the administration of the medical inspection law.

Without question the interest in the schools would be very much better served if the board of education should establish a bureau of school medical inspection under the general direction of the superintendent of schools subject to the sole authority of the board of education. For this purpose a full-time medical inspector should be appointed and his duties prescribed.

For the varied activities connected with this service there might well be a health center where the work carried on by the medical inspector, assistant school physicians, nurses, dentist and others who might be employed in this connection, would be brought together. Until some step of this kind is taken the schools will continue to pay the penalty of the present dual organization.

Physical Education

Physical education was an accepted part of the school program in Niagara Falls several years before the passage of the state physical training law. The citizens of that city, and especially those charged with the education of its children, have therefore had an opportunity to sense some of the values of this work and their attitude toward the state program of physical education and toward their own local obligations and opportunities under this program is most favorable.

Physical education activities were observed in the following elementary schools:

School	*Type of School*
Third Street	Mainly American; one-third of poorer class
Ferry Avenue	Mainly Italian and Polish
Fifth Street	Mainly American
Twenty-fourth Street ...	50% American; 50% foreign, mainly Italian
Tenth Street	60% American; 40% Canadian, Italian, Jews, Armenians and Assyrians

This report is based upon observations in these schools, in which about 2565 pupils are registered and about 69 teachers employed, and upon information gained through the various contacts made.

As has already been noted, the work in physical education is carried on by the supervisor of physical education and two special in-

structors. The supervisor of physical education acts as head of the department and personally supervises the work in all the elementary schools. He exercises a general supervision of the work in the high school which is in charge of two physical instructors — a man and a woman, who have direct charge of the boys and girls, respectively.

The head of the physical education department in his supervision of the work in the elementary grades spends 15 or 20 minutes in each classroom once every three weeks. At the time of these visits he demonstrates new relief drills and teaches games and folk dances. His schedule provides for a day and a half each week for additional supervisory work as needs arise. His program is filled completely each day from 9 to 5 o'clock, about one hour being devoted to office work after school hours. This supervisory schedule is planned to cover fourteen elementary schools, about 150 classroom teachers and over 6000 pupils. He is also expected to exercise general supervision over the work of the high school instructors and assists in the work of some of the athletic teams. This is obviously a more congested program than one person can handle effectively.

In the high school six regular classes a day are conducted by each physical instructor on four days of the week. One day of each week is devoted in part by both physical instructors in the high school to visitation of classes for the purpose of observing the relief drills given by the classroom teachers.

Facilities

Twelve of the elementary schools are provided with playgrounds, nine of which are specially prepared and reasonably well equipped with permanent apparatus. Attention has already been called in the previous preliminary report to the interest which has been shown for several years by the local school authorities in providing proper playgrounds for the public schools. These grounds are utilized both during the summer months and during the regular school year. This policy of providing every elementary school with an adequately equipped playground is highly commendable and sets an example that other school systems would do well to follow. The problem which now confronts the staff is to make the best possible use of the provision that has been made. The local school authorities are using every effort to bring about a full recognition of the importance of the play life of children.

Three elementary schools are provided with swimming pools, showers and dressing rooms. This also is a commendable recognition of the right of childhood to one of the most beneficial and useful forms

of exercise and recreation and serves alike both sexes and all ages in all seasons.

Unfortunately there is no suitable indoor space for physical education in any of the Niagara Falls elementary schools at the present time. It is gratifying, however, to be able to report that the new building program recently passed by the citizens of that city provides for two new junior high schools, each to contain two gymnasiums, or a double gymnasium, and a swimming pool. It is hoped that these new buildings may relieve the crowded conditions in the elementary schools so that a much needed playroom may be provided in every elementary school. It is suggested that a double classroom, if possible, be made available for indoor physical education in every school. When suitable indoor space is provided the matter of the proper equipment and supplies will doubtless receive attention. As a temporary provision this plan is perhaps feasible. Inasmuch as weather and ground conditions during the winter season are not suitable for many of the usual outdoor school games and also since no indoor playspace is at present available, the more extensive organization and supervision of outdoor activities during the fall and spring seasons may merit consideration.

The present facilities consist of a gymnasium for girls in the high school building, which is used at the noon hour as a lunch room, and a temporary frame building on the school grounds for the use of the boys. Unequipped outdoor space is available on the school grounds for outdoor activities and is fully utilized in good weather by the boys. The girls' gymnasium is equipped with a small amount of apparatus and the boys' building has a few pieces of heavy apparatus and basketball goals. Altogether the equipment seems inadequate for physical education but is perhaps as good as might reasonably be expected under the conditions of inadequate space that obtain.

The lack of adequate provision for this work is recognized by the local school authorities and the new building program includes plans for a high school annex, which will contain a new gymnasium for boys or perhaps two gymnasiums, one for boys and one for girls, in case it is found to be unwise in the further development of the building plans to retain the present gymnasium for girls. It is expected that these plans will provide for dressing rooms and shower baths, offices for the physical directors, and the necessary equipment so that the physical education department may be well provided to carry on its work. No swimming facilities are planned for the high school at the present time but it is expected that the pool in the new junior

high school to be located near the present high school may be utilized by the high school pupils.

The classroom teachers in Niagara Falls show an excellent spirit in connection with the work which they are doing in physical education and in many respects are doing very commendable work. In common with classroom teachers generally throughout the State, they need systematic and progressive training and help in this work by the well-qualified physical education specialist. Although the program for the relief drills varies considerably through the grades, classroom teachers give this work regularly and are making commendable efforts to secure the contemplated value of these drills. The relief and hygienic values of this work were noted. The corrective, educational and disciplinary values have not yet received full emphasis.

Posture tests of the children have not been made, though the medical inspectors doubtless noted the more serious cases of poor posture. It does not seem probable, however, that the cursory notations of posture usually made by the medical inspectors once a year should be considered sufficient. The matter of good posture is an important and often a complex problem. All formal physical exercises should be selected and taught partly with the good-posture idea in mind; the physical director and room teacher are therefore likely to become careful observers in this respect. This training for good posture may be closely linked with periodical posture tests in standing, marching and exercising and it is suggested that the physical director give consideration to this problem and gradually train the eye of the room teacher to assist him. The training and habituation of children to good posture must be stimulated from several angles and should be made practical in relation to vocational or other employments. Search for the causes of poor posture and the selection of suitable corrective measures offer an opportunity for correlation of work with the medical inspectors and nurses. Many cases may improve through proper exercise alone, some may improve through the repeated admonitions of the room teacher, others may be due to functional or organic defects and need the advice of the physician, and so on. In some cases all these agencies may be necessary.

The time planned for relief drills in the high school consists of five four-minute periods daily. This is a liberal allotment of time for this work and if given efficiently should secure the desired results. A continued and increased emphasis on the corrective aims of these drills is needed in the high school as well as in the elementary grades and should bring about a well-balanced result. Every possible help and attention is needed from the physical instructors in

order to make it most effective. Games, athletics, folk dances, gymnastic exercises and supervised play are emphasized in accordance with the general plans in effect throughout the State in so far as the facilities in the schools make this program possible. Attention has already been called to the splendid efforts that have been made by the local school authorities to insure playground opportunities in connection with the elementary schools. Full advantage of this opportunity has not yet been taken but is rapidly under way. The work observed was largely indoors. Games and folk dancing constitute the bulk of the exercises used.

It is likely that the possible values of supervised play, games and other recreative activities will be only fractional until adequate indoor space for this work is provided. This situation, however, suggests the possibility of organizing and conducting more extensive outdoor work during the fall and spring. Even on good winter days much outdoor work may be profitably conducted. Folk dances and a wise selection of such indoor games as meet the needs of the pupils and as can be conducted profitably in the classrooms may be reserved for indoor use when conditions prevent outdoor work.

The high school pupils are given two 35-minute (net) periods a week under the special teaching of the physical directors. This work consists of gymnastics, games, athletics, folk dancing, calisthenics and marching. The recreative, hygienic, social and disciplinary values of this training were noted by the inspector, especially in the girls' classes. The boys show a commendable spirit in connection with this work in spite of inconveniences and poor facilities. The girls wear a regulation gymnastic costume for their work; the boys have no dressing rooms but wear rubber-soled shoes.

The option of accepting outside equivalents in the form of home or community activities of the pupils for a part of the required supervised recreation, as provided for in the state syllabus on physical training, has not as yet been systematically administered. The value of utilizing this option is found in part in the opportunity thus offered the department of physical education for influencing the lives of the pupils after they leave the school grounds, of thus extending its influence, and of establishing a closer correlation among the home, the community and the school. This phase of the work constitutes a definite opportunity and problem and will demand careful thought in order to get the realization of its purposes.

It is hoped that when the new gymnasium is ready the high school may be able to meet in full the minimum time-requirements of the State under this division of the program.

The physical directors should be cautioned against "letting down" in their enthusiasm and purposefulness and should be guarded against falling into perfunctory routine performance. Every procedure and every lesson should constitute a part of a larger intelligent progressive plan that is concerned fundamentally with the welfare of the pupils rather than with the procedures themselves.

Extension Activities

Extension, or extra-curriculum, activities in the majority of the schools are confined almost entirely to the spring season. During this season interschool baseball and track athletics are conducted for the sixth, seventh and eighth grades and the statewide physical ability tests are made in the seventh and eighth grades. No after-school recreation clubs or leagues for competitive activities have been organized during the current school year. No recreation centers are available except at the Y. M. C. A. and the Y. W. C. A., which serve some of the older pupils after school.

The three schools that have swimming pools, however, provide for optional instruction and practice in swimming. This work is under the supervision of swimming instructors and provides one 25-minute period a week for children from the fourth to the eighth grades. The pools are used four days a week, two hours a day, from 3 to 5 p. m. The water is changed once a week. The girls use the pools the first two days and the boys the second two days. Temperature of the water is kept at 72 to 76 degrees and the temperature of the room at 76 to 84 degrees. A large percentage of the children in these schools, especially the boys, enjoy the swimming privileges. The possibility of extending the use of these pools to the children of schools where no swimming facilities are available is suggested. It is also suggested that the matter of effective sanitation of the pools be carefully administered in order that no doubt may arise as to their sanitary condition.

The girls' swimming classes are under the expert supervision of a woman and the boys' classes under the expert supervision of two men who teach other special subjects in the schools. At the time of the visits by the inspector the pools were closed on account of epidemics of scarlet fever and diphtheria, hence no opportunity was available for observation of this commendable work.

In the high school local and interschool athletic contests are conducted during the fall, winter and spring seasons. These activities include basketball, baseball, and track athletics. The extensive organization of local recreation leagues has not been emphasized as

SWIMMING POOL IN ELEMENTARY SCHOOL

This is a regular feature of the physical education program in the elementary schools

TENTH STREET SCHOOL AND PLAYGROUND

Indicates the emphasis being given by the local school authorities to adequate play space

yet, due perhaps in part to the lack of adequate facilities. Preliminary contests are held for the selection of representative school teams. The annual physical ability tests for all classes and both sexes are conducted in the spring. Commendable interest was manifested in these tests last year. It is suggested that indoor efficiency tests and outdoor and indoor recreation clubs be considered in connection with the program of extracurricula activities. The objective in this work should be service to every pupil, if possible.

Correlation of Activities

There is every opportunity for a better correlation of the work of physical director, physician and school nurse. The interests of the school physician and school nurse are largely interests in corrective and medical phases of the problem, while the interests of the physical director are largely with the further advancement of those who are apparently physically normal.

The former retains an interest in the defective and discards the apparently normal with perhaps too little concern with the possibility that some of those so discarded may soon appear before them as defectives; the latter devotes his attention mainly to the apparently normal children and throws out the defectives, often not realizing that through the lack of proper knowledge of the possibilities and limitations of his pupils his efforts may be unwisely applied. The former, so to speak, are playing defensive and the latter offensive, in the game of health.

It would seem that the work of these two units should be brought into a more positive and effective correlation. The physical directors must be concerned with all the pupils — the weak, the undernourished, the malformed, the otherwise defective, as well as with the physically normal — and they need the help that the physicians and nurses can give in fitting their work to the needs of the pupils. Likewise the physicians and nurses must be concerned in the forward-looking, educational aspect of their service — the adaptation of health and other school procedures to the processes of growth, the maintenance of normal vigor, the prevention of defects and of interferences with normal development, the overcoming of certain hereditary tendencies, the health engineering of the normal child, as well as with the correction of wrong health habits and physical defects — and they need the help that the physical directors can give on this side of the problem. There are perhaps a few children who need immediately the exclusive attention of the one or the other, but the far greater majority occupy the middle ground and need the services

of both. This fact and the further fact that the results of the work of these two classes of experts are closely interrelated suggest the need for a very close correlation, coordination and sympathetic team work among the physicians, the physical directors and the school nurses. Such organized cooperation would doubtless result in a fuller and more effective understanding of their respective roles in the whole program and of the purposes, the possibilities, the problems, the limitations, and the general and special correlations of the work in this field of educational service.

It would seem wise for these experts to get together often, to discuss their work with one another, to exchange viewpoints and to formulate a systematic method of general and special cooperation so that their combined talent might reach and benefit the individual pupil.

The records kept by the physical education department cover the classroom visitations by the supervisor, the annual physical ability tests of the seventh and eighth grade pupils, and of the interschool athletics of the sixth, seventh and eighth grades during the spring season. These records usually include the results of competitions in baseball and track athletics. Records of posture and malnutrition are kept by the medical inspector, as also are the records of defectives and the work of the school nurses. It would seem that some of these records should be available to the physical education department, such, for example, as the posture records, the records of malnutrition cases, and data regarding the height and weight of pupils. This offers a further opportunity for correlation of the work of these two departments.

This complete correlation may not be possible until a definite plan of organization has been worked out whereby school medical inspectors will cease to be a function of the municipal authorities and become a definite function of the board of education. The present arrangement is illogical and can not result in the best conditions for health supervision in the public schools.

Summary

Not one feature in connection with the health education work in the Niagara Falls school system is more important than a modified organization which will place the administration and supervision of the work of medical inspector under the direction of the local school authorities. The present dual control is unsatisfactory and inefficient. The care of the health in the schools is not a function of the municipal authorities; it is in every sense an important part of the educational service.

The extension of the work that is being done through the open-air schools and through special lunches to undernourished children is most important and should be gradually developed as the facilities of the school plant may make this extension possible.

Additional assistants in the field of physical education are important. More effective help should be given to classroom teachers with their part of the physical education program. Further assistance is essential in order that the plans and purposes of this work may be fully realized and that needed assistance may be given to the teachers, not only through conference, but also to the pupils in connection with the indoor and outdoor phases of the physical training program.

The importance of providing adequate indoor space for physical education in the elementary schools will doubtless be recognized in connection with the new building program that is now under way. More adequate use of the splendid playground facilities which have been provided in connection with the elementary schools will be possible only through the securing of some additional service in this field.

The elementary schools may properly claim need of additional personal assistance in connection with this work.

It is to the credit of the local school authorities that provision has been made in three of the elementary schools for swimming pools, showers and dressing rooms. This is a commendable recognition of the rights of the children for this beneficial exercise. The use of the swimming pools might well be extended, if possible, to serve the children of other nearby schools and also to serve other community groups when the regular work of the school is not in progress.

With the development of the new building program and with some slight addition to the personal staff, there may be careful selection and organization of materials with some needed elasticity in the program which will possibly better meet the needs of individual pupils. In many respects most excellent work is now being done in the field of health education. The suggested modifications may make possible clearer correlation of effort and even better service as the larger school program for the city is realized.

11

THE SCHOOL PLANT

The city of Niagara Falls has had such a rapid growth in population during the past few years that a study of the needs of the school plant in terms of the probable growth during the next decade or score of years, becomes a difficult problem.

According to the federal census in 1910 Niagara Falls had a population of 30,445. The state census of 1915 gave the city a population of 42,259, an increase of 11,814, or 38.8 per cent, during this five-year period.

The population in 1920, according to the federal census, had increased to 50,760, an increase of 20 per cent over 1915, and 66 per cent over the population of 1910.

The school population of Niagara Falls, as indicated by the reports of public school attendance for the past two decades, has been growing rapidly.

Table 41, giving the registration and attendance for each year of this 21-year period, shows the large increase during the latter part of this period.

TABLE 41

Annual registration and average daily attendance in public schools, 1900–20

Year	*Registration*	*Average daily attendance*
1899–1900	3 128	2 263
1900– 1	3 255	2 509
1901– 2	4 071	2 772
1902– 3	4 242	2 818
1903– 4	4 696	3 232
1904– 5	4 602	3 170
1905– 6	4 464	3 608
1906– 7	4 507	3 442
1907– 8	4 496	3 395
1908– 9	4 650	3 688
1909–10	4 751	3 673
1910–11	4 877	3 866
1911–12	5 141	4 103
1912–13	5 509	4 282
1913–14	5 790	4 367
1914–15	6 004	5 013
1915–16	6 288	5 235
1916–17	6 847	5 621
1917–18	7 133	5 914
1918–19	7 686	6 232
1919–20	8 051	6 578

During the school year 1899-1900 the total registration in the public schools of the city was 3128, and the average daily attendance 2263; for the year 1909-10 the total registration was 4751, and the average daily attendance 3673; during the year 1919-20, the total registration was 8051, and the average daily attendance 6578. The increase in registration from 1900 to 1910 was 52 per cent, and in average daily attendance 62 per cent. From 1910 to 1920 the increase in registration was 69 per cent, and in average daily attendance 79 per cent.

The actual increase in the registration in the public schools each year during the past 10 years and the percentage of increase from year to year, is shown in table 42.

TABLE 42

Annual increase in registration during the past decade

Years compared	*Increase in registration*	*Percentage of increase*
1911 over 1910	126	.026
1912 over 1911	264	.054
1913 over 1912	368	.071
1914 over 1913	281	.051
1915 over 1914	214	.037
1916 over 1915	284	.047
1917 over 1916	559	.088
1918 over 1917	286	.042
1919 over 1918	553	.077
1920 over 1919	365	.047

For the 10-year period 1910-1920:

Average annual increase in registration	330
Average percentage of annual increase	5.4

For the 5-year period 1915-1920:

Average annual increase in registration	409
Average percentage of annual increase	6.0

The annual increase in the registration has been somewhat greater during the past five years than for the 10-year period. While the annual increase for the 10-year period has been slightly above 5 per cent, during the last five years the average annual increase has been 6 per cent. For the past year the increase was 4.7 per cent. It would therefore seem to be a conservative statement to estimate the annual increase in the school population for the next decade at 5 per cent each year. The probability is that this will be exceeded.

With a present total registration of 8051, an annual increase of 5 per cent would mean a registration of 10,275 in 1925. This is shown in table 43.

TABLE 43

Estimated registration based on a 5 per cent annual increment

Year	*Increment estimated 5%*	*Registration*
1920.....	....	8 051 (actual)
1921.....	402	8 453
1922.....	423	8 876
1923.....	444	9 320
1924.....	466	9 786
1925.....	489	10 275

This estimated increase in registration of 5 per cent each year shows a total increase of 27.5 per cent for the 5-year period. This would appear to be a low estimate, as the total increase for the past 5 years has been 34 per cent. On this basis the registration will be over 10,000 by 1925 and by 1930 in excess of 13,000. The wisdom of the school authorities and the civic organizations in making a thorough study of the present situation in order to adopt a broad policy covering the school building program, is at once apparent.

The rapid growth in the school population during the past decade has placed a heavy responsibility on the local school authorities. That the situation is appreciated by them is evident from the thought and study now being given to the problem.

The present school plant consists of thirteen elementary school buildings and one high school building. The layman is impressed immediately with the excellent general appearance of the buildings and grounds. The buildings, however, as a group do not provide for the educational opportunities which should be offered boys and girls in a progressive industrial community of today. In the details of the building plans there are many serious faults which thrust themselves upon the attention of the expert in school affairs though they might readily escape the notice of others.

It may be of interest first of all to review the situation briefly historically, noting the years in which school buildings have been erected. Following this historical summary will be given a detailed evaluation of the present school plant in terms of the community needs.

Of the thirteen elementary school buildings, the oldest is the Fifth Street building, erected in 1855. The Cleveland Avenue School was erected in 1872, in the northern part of the city, then known as

Suspension Bridge. Both buildings have been somewhat remodeled since the dates given but definite information as to exact time when changes were made is not available. These two buildings, one in Niagara Falls proper and the other in Suspension Bridge, apparently met the educational needs until after the two incorporated communities were united in 1893. These buildings were doubtless located in or near what were probably the centers of population at that time.

In 1895 the Sugar Street building, an eight-room elementary school, was erected in the southern part of the city. Some time later one room was added. In 1897 two other buildings were added — the Third Street School, a building of six rooms near the business center of the city, and the eight-room Whitney Avenue School, in the northern central part of the city, to which a four-room addition has been made this year. In the following year the Center Avenue building, an eight-room school, was erected some distance north of the Cleveland Avenue School. During the late nineties, therefore, the population was growing both north and south along the Niagara river. The four buildings erected during this period, however, were not large, one being a six-room building and the other three being eight-room buildings.

In 1903 two elementary buildings, the eleven-room Ferry Avenue School and the ten-room Ashland Avenue School, were erected. Apparently the population was increasing somewhat more rapidly in the central sections of the city both east and west. In the same year the present high school building was erected. It is probably one of the first high school buildings of its type, square, with classrooms, recitation rooms, lecture rooms, and laboratories on the outside and with auditorium and gymnasium in the rear center. The grounds are unusually spacious and attractively laid out. It is undoubtedly an excellent building for its purpose and compares very favorably with high school buildings of that period.

Five years later, in 1909, three buildings were erected. The twelve-room Twenty-second Street School provided for growth in population in the section of the city directly east of the old Cleveland Avenue School; and the ten-room Thirteenth Street School was built to the east of the business section in the direction of the Ferry Avenue School. An addition of four rooms has been made to the Thirteenth Street School during the present year. In 1908 there was also erected the Maple Avenue School, a two-room building in the extreme northern end of the city between the New York Central Railroad and the river. During the past few years this part of the

city has developed as a desirable residential section. Two rooms have been added to the Maple Avenue School this year.

Two buildings have been erected since 1908. The Tenth Street School, a twelve-room building, was erected in 1914 directly east of the Fifth Street building not far from the high school; and in 1918 the Twenty-fourth Street School, a twelve-room building, was erected on the eastern side of the city in a rapidly growing foreign section.

It is apparent, therefore, that during the past 11 years twenty-four rooms have been added to the school plant through new buildings, and ten rooms have been added the past year by additions to other buildings. Estimating these thirty-four rooms as accommodating 40 pupils to a room, the number of pupils for whom new provision has been made is 1360.[1] During the past 10 years, however, the increase in registration has been 3036. It is not surprising, therefore, that in some of the buildings several classes in the lower grades are on half time.

Table 44 may be of interest in making more clear the facts relative to the development of the school plant during the period covered by this brief summary.

[1] Another new building is now under construction.

TABLE 44

Development of school plant

SCHOOL	*Date of erection*	*No. of rooms*	*Cost of land*	*Cost of building*	*Date of addition*	*No. of rooms*	*Cost of land*	*Cost of building*	*Total cost*
High	1903	32	$26 000	$147 182 24	....	....	.....	.....	$173 182 24
Fifth Street	1855	23	No data	No data	....	....	$4 000	.....	.....
							1 100*a*		
Cleveland Avenue	1872	23	No data	No data	....	....	.....	.....	.....
Sugar Street	1895	8	No data	25 000	....	1	.....	.....	25 000
Third Street	1897	6	No data	15 000	....	....	639*a*	.....	15 639
Whitney Avenue	1897	8	2 400	18 000	1919	4	4 000	$27 500	51 900
Center Avenue	1898	8	4 000	22 557 81	....	....	.....	.....	26 557 81
Ashland Avenue	1903	10	10 000	27 163 13	....	....	1 100*a*	.....	.....
							500	.....	38 763 13
Ferry Avenue	1903	11	4 700	23 866 59	....	....	9 100	.....	37 666 59
Maple Avenue	1908	2	2 400	4 100	1919	2	5 600	6 250	18 350
Thirteenth Street	1908	10	4 650	29 714 78	1919	4	17 000	26 250	77 614 78
Twenty-second Street	1908	12	2 769	31 603 59	....	....	7 500	.....	41 872 59
Tenth Street	1914	12	14 860	50 745	....	....	.....	.....	65 605
Twenty-fourth Street	1918	12	8 000	100 000	....	....	.....	.....	108 000

a Playground.

The school buildings were judged on the basis of the Strayer "Score Card for City School Buildings." This card, which represents the consensus of judgment of a large number of school people in all parts of the country, as worked out with every care under Doctor Strayer's direction, assigns 1000 points as the maximum score of an ideal city school building and grounds and divides these points in general as follows: site, 125; building, 165; classrooms, 290; special rooms, 140; service systems, 280.

Each of these general topics is further subdivided as illustrated below:

I Site			125
a Location		55	
(1) Accessibility	25		
(2) Environment	30		
b Drainage		30	
(1) Elevation	20		
(2) Nature of soil	10		
c Size and form		40	

Detailed statements of standards upon which scores are based, are provided.

Each school building in Niagara Falls was scored independently by three members of the survey staff and the sum of the median scores assigned by the separate scorers was taken as the final score for each building.

The detailed score for each building as given in table 45 shows the relative weight assigned to each heading and subheading. The maximum or highest possible score is given in the first and second columns, the first column giving the assignment for the five main headings and the second column giving the distribution of these points among the subheadings. Following this is the score for each of the school buildings of the city.

TABLE 45

Niagara Falls school buildings

	Maximum score	High School	Fifth Street	Cleveland Avenue	Maple Avenue	Center Avenue	Twenty-second Street	Whitney Avenue	Ashland Avenue	Twenty-fourth Street	Tenth Street	Ferry Avenue	Third Street	Thirteenth Street	Sugar Street
I Site	125	114	88	114	106	103	110	92	107	110	109	101	102	116	98
A Location	55	55	41	54	50	49	50	49	47	51	52	47	49	49	46
B Drainage	30	29	24	26	26	28	24	18	24	24	29	19	24	27	24
C Size and form	40	30	23	34	30	26	36	25	36	35	28	35	29	40	28
II Building	165	131	106	88	125	120	130	118	133	142	124	130	120	134	111
A Placement	25	15	21	12	22	20	15	22	15	22	22	13	21	17	22
B Gross structure	60	54	36	37	41	48	51	46	53	56	53	50	50	52	40
C Internal structure	80	62	49	39	62	52	64	50	65	64	49	67	49	65	49
III Service systems	280	226	157	154	163	175	159	160	165	228	187	164	127	186	84
A Heating and ventilation	70	63	40	39	48	48	49	47	47	64	45	49	30	49	*
B Fire protection system	65	48	38	39	34	40	47	38	37	47	44	46	32	54	36
C Cleaning system	20	14	14	11	14	14	14	13	13	14	14	8	13	12	12
D Artificial lighting system	20	15	12	14	14	9	8	6	6	14	11	14	0	10	7
E Electric service system	15	15	10	7	3	8	6	8	8	10	8	8	3	8	7
F Water supply system	30	25	14	15	13	15	10	12	14	27	21	11	17	12	15
G Toilet system	50	46	22	22	30	34	18	29	33	45	37	21	25	34	*
H Mechanical service system	10	0	7	7	7	7	7	7	7	7	7	7	7	7	7
IV Classrooms	290	230	182	177	238	243	221	231	222	254	246	223	220	224	228
A Location and connection	35	35	25	26	33	34	34	35	35	35	34	35	32	34	30
B Construction and finish	90	76	57	61	76	79	69	78	76	77	76	79	75	69	74
C Illumination	85	62	51	51	76	75	75	66	69	79	79	74	61	74	72
D Cloakrooms and wardrobes	25	20	11	12	21	21	12	22	16	22	20	7	22	15	22
E Equipment	55	37	38	27	32	34	31	30	32	41	37	28	30	32	30
V Special rooms	140	110	48	45	40	57	46	75	60	87	56	42	34	68	34
A Large rooms for general use	65	45	18	8	20	28	10	27	25	35	20	10	10	11	10
B Rooms for school officials	35	30	4	10	1	11	11	10	15	18	10	14	5	17	4
C Other special service rooms	40	35	26	27	19	18	25	38	20	34	26	18	19	40	20
Totals	1000	811	581	578	672	698	666	676	687	821	722	660	603	728	555

* Considered wholly unsuitable; should be replaced.

The median score for each elementary building arranged in the order of its relative rank according to this scale, is as follows:

School	*Points*
Sugar Street	555
Cleveland Avenue	578
Fifth Street	581
Third Street	603
Ferry Avenue	660
Twenty-second Street	666
Maple Avenue	672
Whitney Avenue	676
Ashland Avenue	687
Center Avenue	698
Tenth Street	722
Thirteenth Street	728
Twenty-fourth Street	821
Total of	8 647
Out of possible	13 000

It is apparent from this table that the median score of the thirteen buildings is 676 points. As a whole, the elementary school plant scores only 8647 points out of a possible 13,000. The percentage of possible points scored by the elementary school buildings was 66.5.

It is observed that of the thirteen buildings three are in the group below 600. Two of these buildings, the Cleveland Avenue School and the Fifth Street School, should probably be abandoned. That is to say, as the local authorities develop a school building program to meet the needs of the city for the next 15 or 20 years, it will doubtless be found wise and economical to abandon these buildings as soon as the development of the new building program makes adequate provision for the children of these centers. As is stated in the summary of the score of the Cleveland Avenue building, "It is recommended that an enlargement of this site or a new site be secured and a modern building erected at the earliest opportunity as it seems probable that to make extensive repairs to this building so as to secure sufficient light, new floors, a sound roof and proper toilet accommodations, would cost so much that the results would not justify such outlay."

The Sugar Street School, which was given a rating of 555 points out of a possible 1000, is given this low rank largely because of the total inadequacy of the heating, ventilating and toilet systems. The conditions were such that no credit whatever could be given in the score under either of these headings. With these features re-

placed with adequate equipment and other minor changes made, the building might easily rank well up in the 600 class.

With the exception of two buildings, Fifth Street School built in 1855 and Cleveland Avenue School built in 1872, the buildings throughout the city are reasonably modern. The first period of development of the school plant was between 1895 and 1899 when four buildings were erected and one was enlarged. The next period of enlargement was from 1903 to 1908 when five elementary schools were built and the present high school plant was completed. The two most recent buildings and the recent additions may be regarded as the beginning of a new period during which the city is to formulate definitely a broad school policy providing for enlarged educational opportunities for all, and to inaugurate a school building program which will not only provide needed space for the school population but make possible the development of a broader educational program for the needs of the entire community.

Adequate playground space is a fundamental requirement of the modern school plant. Authorities differ as to what constitutes reasonable space for recreational activities. It is conservative to state, however, that 30 square feet of playground space to a pupil is an irreducible minimum for this purpose, and that the aim in school planning should be to provide much more generously for the outdoor recreation of the pupils.

The playground area of the elementary schools of Niagara Falls, as shown by the number of square feet to a pupil for each school, varies from the entire lack of playground space at the Sugar Street School to 162 square feet to a pupil at the Maple Avenue School. The situation in this respect at each school may be observed from table 46.

TABLE 46

Playground space

School	*Playground area*	*Enrolment*[1]	*Square feet to a pupil*
Sugar Street	none	398	....
Whitney Avenue	5 000	371	13
Fifth Street	12 584	719	17
Cleveland Avenue	16 356	840	19
Center Avenue	6 516	324	20
Tenth Street	14 464	490	29
Ashland Avenue	11 560	342	34
Thirteenth Street	20 160	539	37
Third Street	8 660	217	40
Twenty-second Street	31 244	526	59
Ferry Avenue	40 478	465	87
Twenty-fourth Street	65 000	591	110
Maple Avenue	20 000	123	162
High School	20 500 (baseball)	742	27

[1] As given to the representative of the State Department, by the principal at the time of the visit.

Although the Sugar Street School has no playground, it has the use of a large adjoining field which has been granted by one of the local power companies for this purpose. Of the other twelve elementary schools, eight have sufficient playground area to meet the minimum of 30 square feet to a pupil. Several exceed the minimum by a wide margin.

The Whitney Avenue School has a playground of less than one-half the needed area. The Fifth Street and the Cleveland Avenue Schools have 54 per cent and 64 per cent respectively of the minimum playground area desirable. The Center Avenue School has two-thirds of the needed area for playgrounds.

It is apparent that the great importance of providing proper recreational space is appreciated by the board of education. Recently additional land has been purchased for playground purposes adjacent to several schools, as follows: Fifth Street, Third Street, Whitney Avenue, Ferry Avenue, Twenty-second Street, Thirteenth Street, Ashland Avenue and Maple Avenue. This indicates public appreciation of the large importance in the educational program of one of the fundamental school activities. In all future school planning the board of education might well meet the standard which it has set in the large playground area recently added to the Ferry Avenue School, or the even higher standard which has been so wisely set in providing for the large playground area when properly developed in connection with the new Twenty-fourth Street School.

The wise policy now being followed by the board of education in enlarging the playground space and thereby increasing the opportunity for recreational activities, will mean that in time all the playgrounds will be furnished with suitable apparatus and that they will be available for play and supervised recreation during the summer vacation and on Saturdays as well as during the school sessions.

While it is not the purpose of this preliminary study to enter into a detailed discussion of the interior arrangement of rooms and the sanitary and hygienic conditions of the buildings, attention should be called to some facts which show the necessity of certain improvements in the school plant to insure the best possible conditions for the school population.

Of the 155 rooms in the elementary school buildings, including 4 study halls and 13 recitation rooms, only 26 meet the minimum legal requirements in respect to all three factors, floor area, air space and window area. The floor area is sufficient in 120 rooms, deficient in 34 rooms, and 1 room is not seated. The air

space is sufficient in only 72 rooms. Only 37 rooms meet the minimum requirement as to window area. In six buildings not a single room has sufficient window area, and in another building only 1 of the 11 rooms meets the minimum requirement. The seriousness of this situation becomes apparent when it is considered that of the 118 rooms deficient in window area only 23 rooms have 90 per cent or more of that required, while 40 rooms have between 80 and 89 per cent, 21 rooms have between 70 and 79 per cent, 11 between 60 and 69 per cent, 20 between 50 and 59 per cent, and 3 between 40 and 49 per cent of the window area required. Most of these rooms, it is true, are in buildings erected prior to the time when this requirement was fixed. On the other hand, in the four-room addition to the Whitney Avenue building, not yet occupied, each of the rooms has approximately 85 per cent of the required window area.

The window arrangement is in the main to be commended, as 99 rooms have windows at the left only, and 37 at the left and rear. Of the other rooms, 10 have windows at the right and rear, 2 at the right only, 2 at the rear only, 2 at the left, right and rear, 1 at the front and left, 1 at the left and right, and 1 at the left, right and front.

Water is supplied to all buildings by the city mains. The lavatories and sinks in ten of the thirteen elementary buildings are supplied with both hot and cold water. There is also hot and cold water for the shower baths which are found in two of the buildings. In one building, hot water is supplied only to the sinks. In another building, hot water is provided only at cleaning time. The Maple Avenue School has no provision whatever for hot water. In some buildings the wash bowls have not been located to the best advantage, and in nine of the buildings they are somewhat insufficient in number. Paper towels are in general use. The absence of towels in some schools was due possibly to lack of attention to the matter on the part of the janitor. It is vitally important that the washing facilities, including hot water, soap and towels receive the constant attention of the school principal. The fundamental principle of any health education program is cleanliness. To the little people of the primary grades, this must mean first of all clean hands, clean faces and clean bodies. Effective teaching and training demand properly equipped lavatory facilities conveniently at hand.

Two of the elementary buildings have swimming pools. This is indicative of a progressive public spirit, and should be continued in the development of the school system as new buildings are planned.

The sanitary conditions of the toilets vary widely. In some buildings in which the toilet arrangements have recently been remodeled, the conditions are of the best. There are eight buildings in which the sanitary condition of the toilets is good. In three buildings, however, these conditions are poor, and in two the conditions can only be characterized as intolerably bad.

In several buildings the toilet facilities are not adequate for the number of pupils registered. Two of the thirteen buildings have a sufficient number of seats for girls. The others have respectively 95, 92, 81, 75, 69, 67, 65, 64, 54, 50 and 32 per cent of the required number. Six buildings have a sufficient number of seats for boys. The others have respectively 91, 89, 88, 69, 69, 59 and 50 per cent of the required number. Two buildings meet the minimum requirement as to urinals. The others have respectively 95, 86, 75, 75, 73, 64, 50, 43, 36, 33 and 28 per cent of the number needed to meet the standard requirement. The above statements are based on the proportion of one seat for every 15 girls, one seat for every 25 boys, and one urinal for every 15 boys. The minimum state requirement is that there shall be one seat for every 25 girls, and one seat and one urinal for every 40 boys. In the table of comparisons the more exacting standard is used for convenience in making comparisons with conditions in schools in other states where the same scale of measurement has been used.

TABLE 47

Toilet accommodations found in Niagara Falls elementary school buildings

	Meeting requirement	*90–99 per cent of standard requirement*	*80–89 per cent*	*70–79 per cent*	*60–69 per cent*	*50–59 per cent*	*Below 50 per cent*
Seats for girls	2	2	1	1	4	2	1
Seats for boys.....	6	1	2	0	2	2	0
Urinals	2	1	1	3	1	1	4

Even though the table were prepared on the basis of the less exacting, many of the buildings would fall below the required standard for toilet accommodations for both boys and girls. The importance of providing suitable and adequate toilet facilities need only be mentioned. A half century ago there was quite an utter lack of intelligent appreciation on the part of public school officials as to the vital importance of this phase of the school problem. There has been great progress, however, in 50 years. While the standard is not where it should be, the public is interested deeply in this question and citizens are insisting that the modern school building make the best possible provision for these needs. Clean, white, sanitary conveniences are most wholesome in their reaction on the moral de-

velopment of the child. In future planning, it would be well to have in mind the importance of providing special toilet accommodations for the kindergarten children. This can often be done with no additional cost if included on the original plans.

It has doubtless already been observed not only that the Fifth Street and the Cleveland Avenue schools (the two oldest buildings in the city) provide space for a large per cent of the elementary school population, having over 26 per cent of the registration as given by the principals in September 1918, but that these two buildings provide in large part the accommodations which the city offers for the educational program for the pupils of the seventh and eighth grades. Of the 311 eighth grade pupils registered in the schools in September 1918, 89.4 per cent were in the Fifth Street and Cleveland Avenue schools. All the eighth grade pupils of the city were in these two schools with the exception of one class of 33 eighth grade boys and girls, which is located in the Twenty-fourth Street School. Of the 420 seventh grade pupils registered in September 1918, 73.9 per cent were in the Fifth Street and Cleveland Avenue schools. Of the 420 pupils of the seventh grade, all except 110 were in these two buildings. One seventh grade class was being cared for in each of the following schools: Twenty-second Street, Tenth Street, Twenty-fourth Street.

TABLE 48

Distribution of grades by buildings

Grades	*Schools*
Kindergarten to eighth grade, inc.....	Fifth Street
	Cleveland Avenue
	Twenty-fourth Street
Kindergarten to seventh grade, inc.....	Twenty-second Street
	Tenth Street
Kindergarten to sixth grade, inc.....	Ferry Avenue
	Ashland Avenue
	Sugar Street
	Thirteenth Street
	Center Street
First grade to sixth grade, inc.....	Third Street
	Maple Avenue
Kindergarten to fifth grade, inc.....	Whitney Avenue

It appears, therefore, that a large per cent of the eighth and seventh grade pupils, approximately 90 per cent of the eighth grade pupils and 75 per cent of the seventh grade pupils, are given their educational training in this critical period of their life in the two oldest buildings of the city, both of which were built long before a

modern educational program or an intermediate school was ever dreamed of. While the pupils of the higher grades should have no better educational advantages than the little people in the primary grades and kindergarten, the proper educational program for the pupils of adolescent age requires a much more extensive equipment and opportunities for diversified activities which can not be met in the old building of 50 or 75 years ago.

There seems to be every reason, therefore, why some immediate and more adequate provision should be made for the seventh and eighth grade pupils in these two buildings. Eventually the two buildings should probably be abandoned. In the meantime, however, something should be done to meet the responsibility to these pupils of the higher grades.

The general survey of the building plant becomes especially acute because of certain outstanding features.

1 The school population is growing far more rapidly than the school plant. School accommodations are not keeping pace with the rapidly increasing registration.

2 The pupils in the higher grades, particularly those in the seventh and eighth years, are mostly crowded into the two oldest buildings in the city, the Fifth Street and Cleveland Avenue schools.

3 The need of differentiated courses of instruction in the higher grades requires proper space and equipment, which can not be met in the buildings of the type mentioned. The development of a program for two or three intermediate schools would provide space also for the ninth year or first year high school pupils and in part relieve the pressure in the high school building.

These points have been brought out in the detailed discussion earlier in the chapter. It remains to make some more specific recommendation as to the program which should be inaugurated immediately to meet the situation and to give the city the educational opportunities which should be offered.

The new twelve-room elementary school building which has been authorized for the southern part of the city, will relieve the congestion somewhat in that locality, and provide school accommodations for the rapidly increasing population of that section. It may be added, however, that the increased space provided by this new building will little more than meet the normal increase in the school population in one year, while at the present time many classes are on half time.

It would appear, therefore, quite imperative that as a part of the immediate program provision should be made also for a large ele-

mentary school for the northern section of the city to be made ready for use at the earliest possible moment. It is very probable that before such a building could be ready, the increase in the school population would fill many of the rooms. A twelve-room building or larger in the northern part of the city, together with the new twelve-room building already under way in the vicinity of 24th street and Niagara street, would only meet the normal conditions in the growth of the school population to be expected in one year.

The larger problem in any school building program has to do with the increase in the school registration covering 5-year or 10-year periods, and the improved school opportunities which every citizen will wish to insure for the boys and girls. The estimates given on page 172 indicate a probable annual increase from 400 to 480 in the school registration during the next few years. If merely desk space were provided for pupils and if the present school buildings were sufficient, this would require during these years at least ten to twelve new schoolrooms each year. This means a new 24-room school building every two years. This leaves entirely out of consideration, however, the present serious handicap under which the seventh and eighth grade pupils are working in the two oldest buildings of the city, congested as they are, poorly lighted, poorly ventilated, and with very limited equipment. It also fails to consider the conditions in the high school where there is already a need for additional space and more modern equipment to meet the demands for technical and industrial work. The broader socialized program which the better schools are following in the intermediate school as a foundation for the work in the senior high school or as a more definite preparation for going out into the activities of the community, require equipment and facilities somewhat more extensive than is required in the lower elementary grades.

It is not the purpose to enter here into a discussion of the aims of a course of study for the intermediate school covering the work of the seventh, eighth and ninth years. This will be treated in full in the chapter dealing with the course of study. However, as the character of the building must be determined in large measure by the work to be done and the activities to be carried on, it may well be noted here that the intermediate school should provide for departmental teaching, rather than for class teaching as in the first six grades; there should be adequate library facilities under proper supervision and direction; the plans should provide suitable laboratories for the science work, general science or biology, as may be offered. There should be an auditorium for school and community purposes,

and also a gymnasium and swimming pool. Moreover, there should be rooms and equipment for manual, household and industrial arts, such as mechanical drawing, woodworking, sheet metal work, printing and general homemaking courses, including cooking and sewing. These or other activities might be added as the industrial life of the community might demand.

The intermediate school is not a vocational school. Its purpose is to offer in these years of school life such a differentiated course that the boy or girl may begin to learn something of the arts which play such a large part in the daily life. These slightly differentiated courses in the intermediate school help the pupil to find himself, and thus fit him better to attack more definitely the work in the high school or to take his place more intelligently in the community life about him.

In developing the school building program to meet the educational needs of the city for the next decade, it will be necessary for the local authorities to consider not only the necessity of a series of elementary buildings so located as to meet the demands of the rapidly growing population and to provide during the next few years for two intermediate schools, one in the southern part of the city and another in the northern part of the city (which will provide accommodations for approximately 800 to 1000 pupils each, with sufficient space for the necessary school and community activities, which should be included in a progressive educational program) but also to provide for the larger activities of the high school which the growing industrial importance of the community and the needs of the individual pupils demand.

It is our judgment that the type of high school for a city the size of Niagara Falls is a large, well-equipped cosmopolitan high school providing under one organization for the academic, commercial, technical and industrial activities, rather than the plan which is sometimes advanced to build and operate separately a so-called technical high school. The development of the intermediate schools with provision for the ninth year or first year high school pupils, will relieve somewhat the congestion in the present high school building. There is, however, not the necessary space for the shops for the various courses with the equipment which must be added to provide these courses as they should be carried on.

It is believed that the additional high school facilities which must be provided at no distant date, should be planned along the line of a cosmopolitan high school which will offer not only all the advantages of the technical high school, but will have the unusual advantage of

THE PROPOSED CLEVELAND AVENUE JUNIOR HIGH SCHOOL

The first step in the new educational program for the city

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Kindergarten and first six grades

articulation between courses and modification of the work of the individual pupil from time to time which is impossible in the small technical high school. Moreover, the various general school activities which are all important in themselves and are a vital part of a liberal education, such as auditorium and assembly exercises, physical training, and general cultural courses, such as history, and are a definite part of the school program in a cosmopolitan high school, oftentimes can not be provided in a small technical high school except in large centers of population where the technical high school in its diversified courses, can offer every special opportunity of this character which is a part of the cosmopolitan high school program.

It is of special interest in this connection to note a statement from the recent report of the Commission on the Reorganization of Secondary Education, entitled "Cardinal Principles of Secondary Education." The report states that "The comprehensive (sometimes called composite, or cosmopolitan) high school, embracing all curriculums in one unified organization, should remain the standard type of secondary school in the United States. . . . The well-organized, comprehensive school can make differentiated education of greater value than can the special-type school, because it aids in a wise choice of curriculum, assists in readjustments when such are desirable, and provides for wider contacts essential to true success in every vocation. . . . The comprehensive school is the prototype of a democracy in which various groups must have a degree of self-consciousness as groups and yet be federated into a larger whole through the recognition of common interests and ideals. Life in such a school is a natural and valuable preparation for life in a democracy. . . . A comprehensive high school can provide much more effectively for health education, education for the worthy use of leisure, and homemaking education than a number of smaller special type schools can."

A high school in a city the size of Niagara Falls can not do better than to plan the high school work on the basis of this type of school organization.

Summary

The school plant should make adequate provision for the school population. During the past decade the city population has increased 66 per cent. The school registration during this period has increased 69 per cent, and the average daily attendance 79 per cent.

During the past decade the number of schoolrooms in the elementary school plant was increased from 111 to 145, or an approximate increase of 30 per cent.[1]

The present annual increase in the school registration will require the construction of a new 24-room building every two years.

The present school plant consists of thirteen elementary school buildings and one high school building. The Fifth Street School was erected in 1855, and the Cleveland Avenue School in 1872. Four small buildings were erected between 1895 and 1898, two buildings in 1903, three in 1908, one in 1914 and one in 1918.

The general appearance of the buildings and grounds is excellent. As a whole, the elementary school plant scores only 8647 points out of a possible 13,000. The percentage of possible points scored was 66.5. On the basis of 1000 points for a perfect school plant, three of the buildings were rated below 600. Two of these, the Fifth Street School and the Cleveland Avenue School, should be abandoned as the development of the new program makes provision for the children of these centers.

With the exception of the two old buildings, the school plant is reasonably modern.

The importance of providing proper recreational space is appreciated by the board of education. Although some schools have limited playground area, additional adjacent land has been purchased recently for playground purposes. The more recent plans make ample provision for play space.

Some modifications are necessary in the older buildings to insure the best possible conditions for school use. Many of these are already under way. In several of the older buildings the light is quite unsatisfactory. Only 26 of the 155 rooms in the elementary school buildings meet the minimum requirement in respect to the three factors, floor area, air space and window area.

The window arrangement is in the main quite satisfactory as 99 rooms have windows at the left only and 37 at the left and rear.

Hot and cold water is supplied to all the buildings except one. The hot water supply, however, is not adequate in several buildings. Hot water, soap and towels are essential in any health education program. These matters should have the careful attention of every elementary school principal.

The sanitary conditions of the toilets vary widely. This matter is having the consideration of the school authorities. Modern sanitary

[1] Another new building is now under construction.

equipment is found in all new buildings. From the older buildings all unsanitary equipment is being removed as rapidly as possible and replaced with modern equipment.

The school population is growing more rapidly than the school plant. The pupils in the higher grades are crowded into two of the oldest buildings in the city. The development of the building program must insure adequate provision for the pupils of the higher grades. The plans which the board of education have under way provide for this essential feature of a modern school organization.

A very considerable enlargement of the high school building is necessary, notwithstanding the relief that intermediate schools may offer. The enlargement of the high school building should make ample provision for shops and technical courses for which the space is now very seriously restricted. A large addition for this purpose, including also a gymnasium and swimming pool, will give Niagara Falls an opportunity for the development of a cosmopolitan high school which is without question distinctive of present development in secondary education.

12

COMPARATIVE SCHOOL COSTS

For purposes of comparison regarding school costs there is given in the following table a list of the cities of the north and west having a population nearest to that of Niagara Falls. The cities have been taken in order from the Financial Statistics of Cities for 1919, issued in 1920 by the United States Census Bureau. In this group there are nineteen cities, some with a larger population than Niagara Falls and others having a population somewhat less. Of the nineteen cities in the group, two are New York State cities, four in Massachusetts, three in Michigan, three in Pennsylvania, two are in New Jersey, one in Iowa, one in Indiana, one in Wisconsin, one in Kansas, and one in Nebraska. In other words, of the nineteen cities, eleven are eastern cities and eight are cities of the middle west.

TABLE 49

Population of nineteen cities throughout the United States nearest to Niagara Falls in population[1]

Racine, Wis.	58 593
Lincoln, Neb.	54 948
Lancaster, Pa.	53 150
Haverhill, Mass.	53 884
Atlantic City, N. J.	50 707
Gary, Ind.	55 378
Topeka, Kan.	50 022
Malden, Mass.	49 103
East Orange, N. J.	50 710
Niagara Falls, N. Y.	50 760
Kalamazoo, Mich.	48 487
Bay City, Mich.	47 554
York, Pa.	47 512
Jackson, Mich.	48 374
McKeesport, Pa.	46 731
Quincy, Mass.	47 876
Newton, Mass.	46 054
Elmira, N. Y.	45 393
Cedar Rapids, Iowa	45 566

In studying the school costs of any community, it is of interest at the outset to note the value of property per capita as a means of

[1] Federal Census, 1920.

indicating the ability of the city to meet its financial responsibilities. Table 50 has been prepared showing the estimated true value of property per capita in the nineteen cities of this group.

TABLE 50

Estimated true value of property per capita, 1919

1	Atlantic City, N. J.	$2 015 54
2	**Niagara Falls, N. Y.**	1 824
3	Newton, Mass.	1 666 10
4	Topeka, Kan.	1 602 50
5	Gary, Ind.	1 541 42
6	Lincoln, Neb.	1 324 65
7	Racine, Wis.	1 308 46
8	Cedar Rapids, Iowa	1 250 80
9	East Orange, N. J.	1 227 30
M 10	Kalamazoo, Mich.	1 093 52
11	Quincy, Mass.	1 070 34
12	McKeesport, Pa.	984 95
13	Jackson, Mich.	958 44
14	Haverhill, Mass.	900 46
15	Elmira, N. Y.	891 62
16	Lancaster, Pa.	866 60
17	York, Pa.	859 31
18	Malden, Mass.	836 93
19	Bay City, Mich.	631 15

It is observed from table 50 that Niagara Falls is a prosperous community, the estimated true value of property per capita in the city being $1824. In this respect Niagara Falls occupies the highest rank of the cities of the group with the exception of Atlantic City.

It may be observed that the estimated true value of property per capita in the cities of the group varies from $631 in Bay City, Mich., to $2015 in Atlantic City. The median of the group is Kalamazoo, Mich., with an estimated true value of property per capita of $1093. It is apparent therefore that Niagara Falls is well able financially to meet the responsibilities of government.

In table 51 the cities of the group are arranged in the order of the total governmental maintenance cost per capita for the year 1919. This includes the general maintenance expenses for all departments of city government but does not include any payments made for capital outlay or for permanent betterments of any kind.

TABLE 51

Per capita payments for general city departmental maintenance expenses, 1919[1]

	1	Newton, Mass.	$32 58
	2	Atlantic City, N. J.	31 89
	3	Quincy, Mass.	22 67
	4	Malden, Mass.	20 76
	5	Haverhill, Mass.	19 91
	6	East Orange, N. J.	19 36
	7	**Niagara Falls, N. Y.**	19 19
	8	Gary, Ind.	17 90
	9	Cedar Rapids, Iowa	16 04
M	10	Jackson, Mich.	15 92
	11	Elmira, N. Y.	15 80
	12	Lincoln, Neb.	15 58
	13	Racine, Wis.	14 63
	14	Topeka, Kan.	14 60
	15	McKeesport, Pa.	14 50
	16	Bay City, Mich.	14 36
	17	Kalamazoo, Mich.	13 15
	18	Lancaster, Pa.	9 61
	19	York, Pa.	9 47

In the per capita payments for general city departmental maintenance expenses, the nineteen cities in the list show a range from $32.58 per capita in Newton, Mass., to $9.47 in York, Pa. The median for the group is Jackson, Mich., where the per capita expenditures for the maintenance of city government were $15.92.

In Niagara Falls the per capita payments for the maintenance of general city government were $19.19. It is apparent that the expenditures of Niagara Falls for general governmental maintenance purposes are somewhat above the median for the group. It is of interest to turn from the previous table to a consideration of the per capita cost payments for school maintenance. The table showing the per capita cost payments for the maintenance of schools in these cities for the year shows a variation in the cities of the group in this respect from $11.26, the per capita cost for school maintenance in Newton, Mass., to $4.30, the per capita cost in Lancaster, Pa.

[1] Financial Statistics of Cities, 1919.

TABLE 52

Per capita payments for school maintenance, 1919[1]

	1	Newton, Mass.	$11 26
	2	Atlantic City, N. J.	10 18
	3	Cedar Rapids, Iowa	9 27
	4	Lincoln, Neb.	8 74
	5	East Orange, N. J.	8 43
	6	Gary, Ind.	7 74
	7	Quincy, Mass.	7 43
	8	Topeka, Kan.	7 41
	9	Bay City, Mich.	6 95
M	10	McKeesport, Pa.	6 62
	11	Malden, Mass.	6 58
	12	Kalamazoo, Mich.	6 55
	13	Racine, Wis.	6 45
	14	Elmira, N. Y.	6 21
	15	Haverhill, Mass.	6 11
	16	**Niagara Falls, N. Y.**	5 56
	17	Jackson, Mich.	5 17
	18	York, Pa.	4 55
	19	Lancaster, Pa.	4 30

It may be observed that according to table 52 the per capita expenditure for school maintenance in Niagara Falls in 1919 was $5.56. In this respect Niagara Falls was one of the lowest cities of the group, only three cities having a lower rank in this respect. The median for the group is McKeesport, Pa., with a per capita expenditure for school maintenance of $6.62.

It is of interest therefore to note in connection with this comparative table that while Niagara Falls is somewhat high in rank in respect to the per capita costs of city government, it is one of the lowest of the group in the per capita expenditures for schools. While Niagara Falls is number 7 in the group in the per capita payments for governmental maintenance purposes, the city is number 16 in the group in the per capita payments for the maintenance of schools. While only six cities of the group are higher than Niagara Falls in the per capita cost of city government, only three cities of the group are lower than Niagara Falls in the per capita expenditures for schools.

It is apparent therefore from the facts already presented that in Niagara Falls a relatively small percentage of the total governmental maintenance expenditures is used for school purposes. Table 53 gives the percentage of general departmental expenditures devoted

[1] Financial Statistics of Cities, 1919, United States Census Bureau, Washington, D. C.

to school maintenance in the nineteen cities of the group for the year 1919:

TABLE 53

Per cent of general city departmental expenses used for schools, 1919[1]

1	Cedar Rapids, Iowa	57.8
2	Lincoln, Neb.	55.2
3	Topeka, Kan.	50.8
4	Kalamazoo, Mich.	49.8
5	Bay City, Mich.	48.4
6	York, Pa.	48.
7	McKeesport, Pa.	45.7
8	Lancaster, Pa	44.8
9	Racine, Wis.	44.1
M 10	East Orange, N. J.	43.5
11	Gary, Ind.	43.4
12	Elmira, N. Y.	39.3
13	Newton, Mass.	34.6
14	Quincy, Mass.	32.8
15	Jackson, Mich.	32.5
16	Atlantic City, N. J.	31.9
17	Malden, Mass.	31.7
18	Haverhill, Mass.	30.7
19	**Niagara Falls, N. Y.**	29.

In Cedar Rapids, Iowa, 57.8 per cent of the general city maintenance expenditures were used for school purposes. It is observed on the other hand that Niagara Falls is the lowest city of the group in respect to the per cent of general city departmental expenditures used for school purposes, where the percentage used for this purpose is 29. The median for the group is East Orange, N. J., where 43.5 per cent of the general city maintenance expenditures were used for school purposes. The position of Niagara Falls in this matter is not to its credit. It is apparent that while Niagara Falls spends a relatively large amount per capita for governmental purposes, the community uses the minimum percentage for the public schools. The people of Niagara Falls, however, are not satisfied with this small allotment of 29 per cent of the departmental maintenance funds for school purposes. This is apparent from the wide public interest which has been taken recently in the educational program of the community on the part of all public organizations. The educational program as carried on by the public school system, the most important of the community activities, can not be properly supported without a reasonable allotment of public funds.

[1] Financial Statistics of Cities, 1919.

In determining the relative expenditures for schools in any group of cities, several factors should be taken into consideration, as the number of children of school age in the city and the number in attendance in the public schools. Comparative data, however, on this point are not available for the year which is covered by this report. These statistics for the cities of the group are not available for recent years. Commercial and economic costs of all kinds have changed so rapidly during the war period that it would be of little interest to make use of data covering conditions several years back. For that reason a discussion on this point is omitted here but is presented later in the chapter on the comparative data covering cities of New York State.

Having considered the estimated true value of property per capita, the governmental maintenance costs and the amount and percentage of funds used for school purposes, especially as they relate to Niagara Falls in comparison with the other cities of the group, it is of further interest to note the wealth back of each dollar used for school maintenance.

TABLE 54

Showing real wealth back of each dollar expended for schools

Bay City, Mich.	$91
Malden, Mass.	127
Cedar Rapids, Iowa	134
Elmira, N. Y.	143
Quincy, Mass.	144
East Orange, N. J.	145
Haverhill, Mass.	147
McKeesport, Pa.	148
Newton, Mass.	148
M Lincoln, Neb.	151
Kalamazoo, Mich.	167
Jackson, Mich.	185
York, Pa.	188
Atlantic City, N. J.	198
Gary, Ind.	200
Lancaster, Pa.	201
Racine, Wis.	203
Topeka, Kan.	216
Niagara Falls, N. Y.	328

In Bay City one dollar was expended for schools in 1919 for every $91 of real wealth. In other words, in Bay City more than one dollar was expended for schools during the year mentioned for every $100 of real wealth in the community. It is observed from the table in which the cities are ranked in this respect that Niagara

Falls is number 19 in the group, where one dollar was used for school maintenance for every $328 of real wealth. In other words, in proportion to the real wealth of the community, Niagara Falls is expending the least for school maintenance of any city in the group. This merely gives further confirmation relative to the ability of Niagara Falls to support a progressive school program far beyond the funds that were used for school purposes in 1919.

In general therefore it may be said that the comparative tables of the nineteen cities of the group, including cities of the north and west for the year 1919, indicate a relatively high governmental maintenance cost for the city of Niagara Falls but that the percentage of funds used for school maintenance is relatively very low. With the exception of one city, Niagara Falls shows the highest real value of property per capita of any city of the group. In the percentage of local governmental expenditures that is used for schools, Niagara Falls is the lowest of the group. Moreover, on the basis of the real wealth back of each dollar expended for school maintenance the comparative table shows that Niagara Falls is the lowest of the group.

Comparisons of School Costs in Niagara Falls with Cities in New York

The first part of this chapter has considered for purposes of comparison nineteen cities in the northern states nearest to Niagara Falls in population. For the purpose of determining the relative rank of Niagara Falls in comparison with cities of New York, the following discussion is presented covering the fifteen cities of this State having a population between 30,000 and 100,000.

Although these cities vary widely in their population, they furnish the opportunity for an interesting study as they are operating under the same general conditions in the same state. Each city has, of course, its own social and economic problems. Some of these cities are part of a large metropolitan population, others are at a distance from the larger municipalities and are the centers of their own commercial and industrial activities. With these differences clearly in mind, the comparisons may be helpful.

The fifteen cities in this group, their population in 1920, and the per capita payments for general city departmental expenses are given in table 55.

TABLE 55

Population and per capita payments for general city departmental expenses, 1920

	City	*Population*[1]	*City*	*Per capita payments*[2]
	1 Yonkers	100 176	Yonkers	$37 22
	2 Utica	94 156	New Rochelle	34 21
	3 Schenectady	88 723	Watertown	28 99
	4 Troy	72 013	Mount Vernon	27 97
	5 Binghamton	66 800	**Niagara Falls**	27 11
	6 **Niagara Falls**	50 760	Schenectady	26 78
	7 Elmira	45 393	Troy	23 71
M	8 Mount Vernon	42 726	Jamestown	23 66
	9 Jamestown	38 917	Elmira	22 86
	10 New Rochelle	36 213	Poughkeepsie	22 09
	11 Auburn	36 192	Binghamton	21 56
	12 Poughkeepsie	35 000	Utica	20 69
	13 Amsterdam	33 524	Amsterdam	20 57
	14 Watertown	31 285	Newburgh	19 51
	15 Newburgh	30 366	Auburn	19 23

Of the fifteen cities in this group, Niagara Falls is number 6 in population and number 5 in the per capita payments for general city departmental expenses. The median per capita city cost for the group for the year was $23.66. The per capita payments for all departmental maintenance expenses in Niagara Falls for the year were $27.11, or $3.45 above the median of the group. This table does not take into consideration interest charges or expenditures for outlays. It is therefore a fair comparison of the governmental maintenance costs of the cities of the group for the year.

It should be observed in this connection that the per capita maintenance costs for the various cities were computed by taking the total expenditures for governmental maintenance cost as reported by the State Comptroller for the calendar year 1919 and dividing this total by the population as given by the federal census for January 1920.

It is observed that Niagara Falls holds relatively a high rank in the group in respect to the per capita maintenance cost of the city government for the year. Table 56 shows the per capita payments during the school year ending July 1920 for the maintenance of schools in the fifteen cities of the group. The table has been prepared by taking the total expenditures for school maintenance during

[1] Federal Census, 1920.
[2] Amount given in report to State Comptroller Municipal Accounts, 1919, divided by federal population, January 1920.

the year and dividing this by the city population as given by the federal census.

TABLE 56

Per capita payments for maintenance of schools, 1920

		City	*Amount*
	1	Schenectady	$13 92
	2	New Rochelle	13 71
	3	Yonkers	13 09
	4	Mount Vernon	10 45
	5	Jamestown	9 02
	6	Auburn	8 69
	7	**Niagara Falls**	8 59
M	8	Watertown	8 07
	9	Elmira	7 73
	10	Binghamton	7 68
	11	Newburgh	7 53
	12	Utica	6 95
	13	Amsterdam	6 67
	14	Poughkeepsie	6 32
	15	Troy	5 54

On the basis of the per capita payments for school maintenance, it is observed that the highest per capita cost for school maintenance is Schenectady with $13.92. The lowest is Troy with a per capita cost of $5.54. The median is Watertown with $8.07. The per capita payments for school maintenance in Niagara Falls for 1920 were $8.59, which is 52 cents above the median of the group. It will be noted further from the table that all cities in the group from number 6 to number 11 are within a per capita expenditure of approximately one dollar. All these cities therefore, including Niagara Falls, may be said in a sense to occupy a median rank.

A further comparison of tables 55 and 56 determines the percentage of general city departmental expenses that are used for school purposes.

TABLE 57

Per cent of general city departmental expenses used for schools, 1920

	City	Per cent
1	Schenectady	52
2	Auburn	45
3	New Rochelle	40
4	Newburgh	38.2
5	Jamestown	38.1
6	Mount Vernon	37
7	Binghamton	35.6
M 8	Yonkers	35.1
9	Elmira	33.8
10	Utica	33.6
11	Amsterdam	32
12	**Niagara Falls**	31
13	Poughkeepsie	28
14	Watertown	27
15	Troy	22

It is observed that in this group of cities the percentage of city departmental maintenance expenditures used for school purposes in the year 1920 varies from 22 per cent in Troy, which is the lowest, to 52 per cent in Schenectady, which has the highest rank of the cities in the group. The median is 35.1 per cent. Niagara Falls, it is observed, ranks twelfth in the group of fifteen cities with a percentage of 31. This low rank would seem to indicate that the public schools in Niagara Falls do not receive a reasonable allotment of city funds.

In comparing this table with the corresponding table given in the early part of the chapter, which included the nineteen cities from different states, it may be noted that the fifteen cities of this group in New York do not compare favorably with the larger group in respect to the percentage of general departmental payments used for school maintenance. The median for the group of nineteen cities in different states was 43.5 per cent; the median for the fifteen cities of New York State was 35.1 per cent. The statistics for the group of New York cities are for the year 1920 while the statistics for the larger group including cities from other states are for the year 1919. The actual difference in 1920 is therefore even greater than is shown by these comparative tables. Similar comparative statistics for the larger group for the year 1920 would undoubtedly show a larger percentage of city departmental expenses used for schools as the trend in all communities is in this direction.

Noting further the comparison between the two groups, it is observed that with the exception of Schenectady and Auburn all the

New York cities rank below the median of the larger group. It would appear therefore that the cities in the New York group show a relatively low percentage of general city departmental expenses used for school maintenance. In the first group Niagara Falls was the lowest in rank; in the second group covering the New York cities, Niagara Falls has the lowest rank with the exception of three cities.

As has already been stated, a very satisfactory basis of comparison in determining school costs is the maintenance cost per pupil in average daily attendance. The per capita maintenance cost, which is based on the total population, does not take into consideration the varying percentages of children of school age or make allowances for the children who may be in private or parochial schools. The maintenance cost per pupil in average daily attendance giving a comparison on the basis of the number of pupils under instruction is therefore of special interest. Table 58 gives the maintenance cost per pupil in average daily attendance in the fifteen cities of this group for the school years 1915–16 and 1919–20.

TABLE 58

Maintenance cost per pupil in average daily attendance in fifteen New York cities

	1915–16			*1919–20*	
	1 Mount Vernon	$59 63		Yonkers	$85 01
	2 New Rochelle	59 16		New Rochelle	84 73
	3 Troy	56 94		Mount Vernon	76 77
	4 Yonkers	55 78		Auburn	76 06
	5 Binghamton	50 79		Troy	75 04
	6 Auburn	50 34		Utica .....est.	71 58
	7 Schenectady	47 36		Elmira	67 55
M	8 Elmira	43 45	M	Schenectady	65 20
	9 **Niagara Falls**	43 22		**Niagara Falls**	64 43
	10 Utica	42 13		Binghamton	63 25
	11 Jamestown	41 96		Jamestown	61 32
	12 Amsterdam	38 55		Newburgh	54 11
	13 Poughkeepsie	38 17		Amsterdam	50 83
	14 Newburgh	36 43		Watertown	50 92
	15 Watertown	33 19		Poughkeepsie	47 78

Table 58 is of interest in that it gives comparative data on the maintenance cost per pupil in average daily attendance covering two years at the beginning and at the close of the war period. The table shows that the maintenance cost per pupil in average daily attendance in these cities for the year 1915–16 varied from $33.19 in Watertown to $59.63 in Mount Vernon. The median for the group for the school year 1915–16 was Elmira, where the main-

tenance cost per pupil was $43.45. In Niagara Falls the maintenance cost per pupil in average daily attendance during the year 1915–16 was $43.22. During that year Niagara Falls was slightly below the median for the group in this respect.

During the school year 1919–20 the maintenance cost per pupil in average daily attendance in the fifteen cities of the group varied from $47.78 in Poughkeepsie to $85.01 in Yonkers. The median for the group was Schenectady with a maintenance cost per pupil of $65.20. During the school year 1919–20 the maintenance cost per pupil in average daily attendance in Niagara Falls was $64.43, which was slightly below the median for the group, Niagara Falls occupying the same relative position among the fifteen cities that was held during the school year 1915–16.

In comparison therefore with the other cities of the group, Niagara Falls occupies a position considerably below the median in the maintenance cost of the city schools as determined by the number of pupils in average daily attendance. This comparison would still further confirm what has already been observed that the public schools in Niagara Falls do not receive a reasonable allotment of public funds. Moreover in comparison with other cities, the expenditures for public schools are somewhat below the median rank. It may be observed further that during the four-year period from 1916 to 1920 the median cost of school maintenance based on the average daily attendance in the fifteen cities of New York State increased approximately 50 per cent. The increase in Niagara Falls was approximately the same percentage although in each case Niagara Falls is slightly below the median of the group. During this period when school costs in the cities of the group were increasing approximately 50 per cent, economic and commercial costs of all kinds were increasing from 100 to 150 per cent. This indicates the economy with which the school programs were carried forward.

TABLE 59

Instructional cost per pupil in average daily attendance in fifteen New York cities

	1915–16			*1919–20*	
	1 New Rochelle	$45 17		1 Yonkers	$67 59
	2 Mount Vernon	45 10		2 New Rochelle	63 88
	3 Yonkers	44 54		3 Mount Vernon	57 82
	4 Troy	43 99		4 Troy	57 09
	5 Binghamton	38 20		5 Auburn	56 83
	6 Auburn	37 29		6 Elmira	54 31
	7 Schenectady	35 22		7 Utica	52 50
M	8 Elmira	33 42	M	8 Schenectady	48 72
	9 **Niagara Falls**	32 37		9 Binghamton	47 74
	10 Utica	32 07		10 **Niagara Falls**	47 16
	11 Jamestown	30 94		11 Jamestown	45 09
	12 Amsterdam	27 23		12 Newburgh	42 21
	13 Newburgh	26 87		13 Amsterdam	36 19
	14 Poughkeepsie	26 80		14 Poughkeepsie	34 39
	15 Watertown	20 95		15 Watertown	31 61

The instructional cost per pupil in average daily attendance in the fifteen New York cities of the group shows an increase during the four-year period from 1916 to 1920 which approximates an increase in the maintenance cost per pupil during the same period. The median instructional cost per pupil in the fifteen cities of the State during the school year 1915–16 was $33.42. The median instructional cost per pupil in this group of cities during the school year 1919–20 was $48.72, an increase of 46 per cent. In the city of Niagara Falls the instructional cost per pupil in average daily attendance in 1919–20 was $47.16, an increase of 45 per cent in the instructional cost per pupil in Niagara Falls during the four-year period.

It may be observed that the instructional cost per pupil in average daily attendance in Niagara Falls during the year 1919–20 was somewhat below the median of the group of fifteen cities. The instructional cost per pupil in the cities of the group this year varied from $31.61 in Watertown to $67.59 in Yonkers.

It may be repeated that the increase in instructional cost in these cities during the four-year period does not represent a reasonable increase when considered in connection with the increase in economic costs during this period.

As a further factor in determining the ability of Niagara Falls to provide adequately for a progressive educational program the real value of property as given in the Report of the State Tax Commission for 1919 is of interest.

TABLE 60

Real value of property per capita, 1919

	1	New Rochelle	$2 051
	2	**Niagara Falls**	1 855
	3	Yonkers	1 622
	4	Mount Vernon	1 560
	5	Schenectady	1 159
	6	Jamestown	997
	7	Poughkeepsie	996
M	8	Utica	924
	9	Watertown	922
	10	Newburgh	906
	11	Amsterdam	892
	12	Troy	885
	13	Binghamton	853
	14	Elmira	822
	15	Auburn	803

The relative rank of Niagara Falls in respect to the real value of property per capita is approximately the same in respect to the New York cities as was shown in the comparative tables earlier in the chapter covering nineteen cities throughout the north and middle west. With one exception, Niagara Falls has the largest real value of property per capita of any of the fifteen cities of the New York group.

The real value of property per capita in Niagara Falls is $1855. The median for the group is Utica, where the real value of property is $924. Niagara Falls is therefore abundantly able to support a progressive school program for the community.

If the real value of property per capita is divided by the per capita payment for school maintenance we may determine the real wealth back of each dollar expended for schools.

TABLE 61

Real wealth back of each dollar used for school maintenance

	1	Schenectady	$83
	2	Auburn	92
	3	Elmira	106
	4	Jamestown	110
	5	Binghamton	111
	6	Watertown	114
	7	Newburgh	120
M	8	Yonkers	123
	9	Utica	133 05
	10	Amsterdam	133 88
	11	Mount Vernon	149 29
	12	New Rochelle	149 63
	13	Poughkeepsie	157
	14	Troy	159
	15	**Niagara Falls**	216

TABLE 62

Amount expended for school maintenance in 1920 for every $100 of real wealth in fifteen New York State cities

	1	Schenectady	$1 20
	2	Auburn	1 08
	3	Elmira	94
	4	Jamestown	91
	5	Binghamton	90
	6	Watertown	87
	7	Newburgh	83
M	8	Yonkers	81
	9	Utica	75
	10	Amsterdam	75
	11	Mount Vernon	67
	12	New Rochelle	67
	13	Poughkeepsie	63
	14	Troy	62
	15	**Niagara Falls**	46

The real wealth back of each dollar used for school purposes during the year 1919–20 varied from $83 in Schenectady to $216 in Niagara Falls. The median is Yonkers where the real wealth back of each dollar used for school purposes is $123. In other words, for every $100 of real wealth, Schenectady expended $1.20 for school maintenance, Yonkers $.81, while Niagara Falls expended only $.46 for school current expenses.

The tables therefore indicate that while in Schenectady one dollar is used for school purposes for every $83 of real wealth, in the city of Niagara Falls one dollar is used for school maintenance purposes

for every $216 of real wealth. This gives further confirming evidence of the ability of Niagara Falls to provide for its school program. There is no purpose in the tables that have been presented to maintain that Niagara Falls is not doing excellent things in connection with its educational work. The tables give every evidence, however, that the city is abundantly able to provide much more generously than has thus far been done for its school program.

TABLE 63

Percentage distribution of expenditures for school maintenance purposes in fifteen New York cities for the school year 1919-20

	School plant						
	General Control	*Instruction*	*Operation*	*Maintenance*	*Auxiliary agencies*	*Fixed charges*	*Total per cent*
Amsterdam	4.7	72.0	12.9	4.5	4.4	1.5	100
Auburn	3.4	75.0	13.6	3.6	2.0	2.4	100
Binghamton	3.5	75.7	15.5	2.1	2.4	.8	100
Elmira	3.0	80.8	9.8	3.2	2.0	1.2	100
Jamestown	3.3	74.8	13.2	4.7	2.4	2.6	100
Mount Vernon ..	4.2	75.5	10.0	3.2	5.8	1.3	100
New Rochelle ..	2.9	75.6	12.4	3.3	5.0	.8	100
Newburgh	3.4	78.2	10.7	2.5	4.3	.9	100
Niagara Falls...	3.3	73.9	11.7	7.3	2.4	1.4	100
Poughkeepsie ...	4.7	72.3	14.5	3.8	2.6	2.1	100
Schenectady	2.5	75.8	12.9	4.0	3.9	.9	100
Troy	3.4	76.4	14.5	1.4	3.1	1.2	100
Utica	3.5	73.5	15.0	5.0	2.0	1.0	100
Watertown	2.0	63.4	19.8	6.3	6.2	2.3	100
Yonkers	2.2	79.9	12.4	3.3	2.1	.1	100
Niagara Falls rank	10	11	12	1	11	6	

Table 63 indicates clearly that the large part of the expenditures for current school expenses is for instructional purposes. The table giving an analysis of the distribution of school maintenance funds divides the expenditures on a percentage basis into general control, expenses of instruction, operation of school plant, maintenance of school plant, auxiliary agencies and fixed charges. The cities have been arranged alphabetically in the list.

It may be observed in general that in the percentage distribution of school maintenance funds Niagara Falls does not differ widely from the general policy followed in the other cities of the group.

The table might also be read in this manner. Of every dollar used for current school expenses Niagara Falls spends 3.3 cents for purposes of general control, 73.9 cents for instructional costs, 11.7 cents for the operation of the school plant, 7.3 cents for the maintenance of the school plant, 2.4 cents for auxiliary agencies, and 1.4 cents for fixed charges.

In comparison with the other cities of the group, Niagara Falls occupies a relatively low rank in percentage of expenditures used for general control, instructional purposes, operation of the school

plant and auxiliary agencies. The position of Niagara Falls is the highest in respect to the maintenance cost of the school plant. The position is nearly median in the percentage amount expended for fixed charges.

The low rank of Niagara Falls in the percentage of funds used for the operation of the school plant would indicate that this is economically administered. It is also true that the Niagara Falls school authorities are more jealous than many cities of the condition of the school plant and therefore undoubtedly put more funds into the maintenance of the equipment than is done in many cities. This is highly to the credit of the local school authorities.

The table gives some interesting facts with regard to the percentage of maintenance funds used for instructional purposes. It is observed that in all the cities of the group there is a striking ratio which this part of the budget bears to the total school costs. The expenses of instruction in these cities are between 63.4 and 80.8 per cent of the total expenditures for school maintenance. With the exception of one city in the group the percentage used for this purpose is between 72 and 80.8. One city of the group is so far below the others in this respect that it indicates a rather unusual situation. Table 64 gives this percentage for each city of the group arranged in the order of rank.

TABLE 64

Percentage of maintenance expenses used for instructional purposes

	1 Elmira	80.8
	2 Yonkers	79.9
	3 Newburgh	78.2
	4 Troy	76.4
	5 Schenectady	75.8
	6 Binghamton	75.7
	7 New Rochelle	75.6
M	8 Mount Vernon	75.5
	9 Auburn	75.0
	10 Jamestown	74.8
	11 **Niagara Falls**	73.9
	12 Utica	73.5
	13 Poughkeepsie	72.3
	14 Amsterdam	72.0
	15 Watertown	63.4

Niagara Falls, as may be observed, is below the median in rank in percentage of school maintenance expenditures used for instructional purposes.

The total bonded indebtedness of the city on January 1, 1919 was $3,561,219. Of this amount the school bonds amounted to $529,919. In other words, the school bonds represent only 14.8 per cent of the total bonded indebtedness of the city. It may be of interest to note that for several years the percentage has been approximately the same. The figures for the years 1912 to 1918, except 1916, are given in table 65.

TABLE 65

Outstanding bonds, city of Niagara Falls, 1912 to 1918[1]

Kind of bonds	*1912*	*1913*	*1914*	*1915*	*1916*	*1917*	*1918*
School bonds	$359 919	$354 919	$410 919	$406 419		$477 419	$529 919
Water bonds	1 219 500	1 212 000	1 266 500	1 256 500		1 289 500	1 194 500
Sewer bonds	1 055 000	990 000	986 800	1 020 800	Not	1 195 800	1 222 300
Miscellaneous bonds	202 900	271 700	262 700	253 700	available	580 700	597 700
Certificates of indebtedness	15 800	23 800	30 800	26 800		19 800	16 800
Total bonded indebtedness	2 853 119	2 852 419	2 957 719	2 964 219		3 563 219	3 561 219
Percentage of total in school bonds	12.6	12.4	13.8	13.7		13.4	14.8

[1] Reports of city clerk, Niagara Falls.

On the basis of an estimated population of 55,000, the present total bonded indebtedness of $3,561,219 is $64.75 per capita, and the outstanding school bonds represent an indebtedness of $9.63 per capita. The percentage of total outstanding bonds during the period of years from 1912 to 1918, represented by school bonds, has been quite constant, this percentage varying from 12.4 per cent in 1913 to 14.8 per cent in 1918.

Summary

Niagara Falls is a prosperous community. The real wealth per capita is far above the average for the cities of its class in New York or in other states. Niagara Falls has nearly double the per capita wealth of the average of the cities of either comparative group.

The ability of Niagara Falls to support a progressive school program is clearly established.

In comparison with cities in its class, in New York and in other states, Niagara Falls ranks much higher in the per capita expenditures for the maintenance of government than for the maintenance of schools. In 1919 only three cities of nineteen cities in the north and west showed a lower per capita expenditure for school maintenance. In 1920 Niagara held approximately a median position among the New York cities in the per capita expenditures for schools.

Niagara Falls occupies relatively a low rank among the cities of these groups in the percentage of funds used for school purposes. A community that uses only from 29 (1919) to 31 (1920) per cent of its general departmental expenditures for school purposes is not meeting its full educational responsibility.

In both groups of cities Niagara Falls shows the lowest expenditures for schools on the basis of the real wealth per capita. In 1919 Niagara Falls used one dollar for school maintenance for every $328 of real wealth. In contrast with this it is noted that Elmira used one dollar for school maintenance for every $143 of real wealth. In Bay City, Mich., one dollar was used for school purposes for every $91 of real wealth. In 1920 the maintenance cost per pupil in average daily attendance in Niagara Falls was $64.43. This is somewhat below the average of the fifteen New York cities used in the comparative tables. The ability of Niagara Falls to support an educational program has greatly increased during the past few years. This is not yet reflected in the school costs for the city although a most commendable program for developing the school opportunities is already under way.

On the basis of the instructional cost per pupil in average daily attendance, Niagara Falls is also below the average of the fifteen cities of New York used in the comparative tables. On the basis of instructional cost per pupil, Niagara Falls occupies a somewhat lower rank than in 1915–16.

The percentage of increase in school maintenance costs and in instructional costs per pupil in the cities of New York during the past four years does not represent a reasonable increment when considered in connection with the marked increase in commercial and economic costs during this period.

The percentage distribution of school maintenance funds in Niagara Falls does not differ widely from the general policy followed in other New York cities.

What effect the continuing salary increases during the current school year, for which statistics are not yet available, would have upon the relative standing of Niagara Falls in comparison with the other cities can not be determined. We are of the opinion, however, that the relative rank of Niagara Falls will not be changed in any great degree as a result of comparative data that will be available later covering the present year because of similar conditions that have been effective in the other cities.

The outstanding feature in Niagara Falls relative to school costs at the present time is the unusual and broad program that is already under way for the development of the school plant and the reorganization of the higher grades for improving the opportunities that are to be offered to the pupils of the early adolescent period. The carrying forward of this program should put Niagara Falls educationally into the very front rank of the cities of her class in this State or in other states.

In general therefore it may be stated that with a tax levy that is apparently not excessive, with a large amount of wealth back of each dollar used for schools, with a relative rank somewhat below the average for school costs whether on the per pupil or the per capita basis, with a minimum percentage of general city maintenance funds now being used for school purposes it seems reasonable to believe that the people of the community will approve a reasonable increase in the educational budget not only for the routine work of the schools but also that the broader and more progressive program now under way may be fully developed to meet the needs of this rapidly growing industrial and commercial center.

ADVANCED MACHINE SHOP CLASS IN THE VOCATIONAL SCHOOL

HIGH SCHOOL COOKING CLASS

13

INDUSTRIAL EDUCATION SURVEY[1]

Outside of the building trades and some few lines of manufacturing, the findings show a number of large establishments turning out specialized products produced by highly technical processes which utilize some form of electric furnace depending upon large supplies of electric current, employ considerable numbers of unskilled or low-grade skilled workers, many of whom are foreign born.

This last and typical group constitutes naturally the main problem of this survey and will be dealt with first.

The Electro-chemical Industries

Almost all reports state that the knowledge and skill needed for the large mass of production workers can be obtained in routine practice and even that the preparation for the advanced jobs can be so obtained. For the bulk of these workers the only educational provisions discernible are those that will bring opportunities for elementary scientific information before the whole group and that place opportunities for instruction before the specially able and ambitious so that the small number that will take advantage of the latter provisions may fit themselves for upgrading and advancement.

First of these provisions would seem to be popular evening lectures on the elementary conceptions of chemistry and electricity with special reference to their applications in the local industries. Such lectures, if presented in the simplest possible way making large use of illustrative material, graphic methods and illuminated by practical applications, could probably be made sufficiently interesting to attract many plant workers in whom they would serve to develop a more intelligent attitude toward their work and to enlarge their mental horizon. Such a proposition may be held to be more of a provision for general rather than for industrial education. Perhaps it is. Such lectures, however, if made interesting enough to appeal to the workers could hardly fail to increase their industrial intelligence and in many cases to stimulate the interest to further study.

In considering the second suggestion, it is evident that with organizations of such character as those represented in the electro-chemical

[1] Prepared by C. R. Richards, Director of Cooper Union, New York City.

industries, one of the acute problems is that of training foremen. The findings show that the shift foremen often come from the gang. Beyond these are the foremen of departments, sometimes coming from the laboratories and sometimes from the shift foremen. These latter present the need for special technical and scientific training. The qualities needed for effective work as foremen are so much a matter of personal make-up that the bringing of outside training to bear on this problem can hardly be done except through offering opportunity for evening courses, which by a process of natural selection will be availed of by the more able and ambitious workers.

The courses of most value in this connection would seem to be those in physics, electricity and chemistry noted in a later portion of the report. Courses in foremanship, bringing out the duties of foremen, the qualities needed for successful handling of men and practical suggestions for dealing with difficult situations, have been developed in the last few years, notably at the Submarine Boat Corporation at Newark Bay. Some of the results are shortly to be published by the Federal Board for Vocational Education. When such instruction is more thoroughly developed and standardized it is possible that such a course might be given with advantage at Niagara Falls.

The practice of all the establishments in the electro-chemical group is to employ no men in the production departments younger than 18 because of the state law prohibiting the employment of minors in dangerous occupations. From the nature of the case these young men are not high school material. They have almost inevitably left the grammar school at 14 or 15 years of age to go to work. They consequently have little general education and must necessarily have passed the time before employment in these plants in other jobs not generally educative or disciplinary.

The preemployment training in day schools in chemistry, electricity and other subjects, specified as desirable for these workers by some of the superintendents, is because of these conditions, and consequently not practicable except in the most elementary form. These conditions of employment of young workers in the electro-chemical industry represent a typical case of the educational waste of the years between 14 and 18 prevalent throughout the country in the case of industrial workers. The compulsory continuation school law recently enacted by the State of New York aims to ameliorate to some extent this wastage and it seems peculiarly unfortunate that the conditions in the electro-chemical industries at Niagara Falls prevent taking advantage of the provisions of this law.

Workers in Chemical Laboratories

The workers in the chemical and allied laboratories present a special element from the educational standpoint. It is stated that a number of boys who have had only a grammar school training are employed as laboratory assistants or routine analysts. If this practice is to be followed, little can be done in supplementary training for such workers except through evening or preferably day part-time classes. These possibilities will be referred to later on.

The organic relation, however, that would seem to open up between the school system and the chemical laboratories and engineering departments is through specially adapted high school courses organized with a special aim to prepare for this field of work. The practicability and value of such a provision depends on whether the industries are willing to pay the price of high school graduates so trained. If they are willing, it is thoroughly feasible to organize courses in the high school giving special emphasis to chemistry, electricity, drafting and mechanics that would equip graduates for advantageous entrance into the laboratories and into the engineering side of the plants as well as bringing more young men of good general education into the industries.

If the high school is to be maintained on the four-year basis, such courses might well be based upon general work in physics and chemistry and drawing in the first two years of the high school and then provide opportunities for further study as electives in either of these three fields in the last two years. If, however, the high school work is to be reorganized on the basis of a three-year junior high school and a three-year senior high school, such courses would naturally be given in the senior school. This work should be developed largely through a series of laboratories and drafting rooms equipped for the further study of chemistry, electricity, heat and mechanics, and organized on a basis sufficiently intensive to produce practical vocational results. Three full hours a day should be devoted to technical instruction whether of laboratory, drawing room or classroom. On this basis two-thirds of the salaries of teachers engaged in such instruction would be met by payments from the State Department of Education and the Federal Board of Education. The efficiency of such work would be much increased if summer work could be arranged upon a cooperative plan by which part of the pupil's time could be spent in the establishments and part in school. A feature of such courses should be talks from high-grade men in the industries upon special phases of the local industries.

For the laboratory workers already in employment, evening or part-time day courses might well be provided in the public schools. The survey of the evening school chemistry problem made by the committee of the chamber of commerce, giving the opinions of employers in the form of a questionnaire, contributes very helpful data in this direction. For those workers with little or no previous training in chemistry, a two-year course with instruction three evenings a week, dealing with elementary inorganic chemistry, is recommended. It might be possible to take up the beginning of qualitative analysis in the latter part of the first year. The second year of such a course should be devoted to qualitative analysis. An experience of 22 years in supervising evening classes in chemistry leads the writer to feel that the background of appreciation and the accuracy in manipulation necessary to deal intelligently and profitably with the subject of quantitative analysis can not be secured in less than two years of preliminary evening work. A third year of advanced work might well be devoted to quantitative work. In such a course covering the elements of gravimetric and volumetric analysis, the principles and some experiments in electro-chemistry might be included. These courses should be administered so as not only to allow younger workers to progress steadily throughout the course, but so that laboratory workers qualified by their experience could be admitted in the second and third years.

All these courses might be maintained on the basis of three nights a week, although four nights devoted to the second and third year courses would accomplish more. One evening should be devoted to a lecture and recitation and the remaining evenings to laboratory work. It is particularly recommended that no lecture courses be given without an accompanying recitation or quiz, as the assimilation of material presented in lectures can not be assured in the case of immature pupils without such provision. Beginning with the second year, instruction in the laboratory should be differentiated when practical and desirable to reach the needs of the groups coming from different establishments.

The proposition for a round-table course for experienced men in the laboratories is one that conceivably might be of much advantage but it is not one that lends itself readily to methods of instruction available in a city school system. The most natural way in which such a course could be developed and conducted would seem to be through the initiative of the workers and employers themselves. In such a case a room for meetings might well be provided by the school authorities.

Workers in Skilled Trades

The maintenance and repair workers in the plants, such as carpenters, millwrights, machinists, electricians and draftsmen, represent much the same situation as these workers in outside trades and will be dealt with in the following portion of the report.

All the other plants studied culminate in small groups of skilled workers in various mechanical trades, usually with relatively large numbers of semiskilled operators. The building trades represent a number of skilled trades. In all, the following trades are represented: draftsmen, machinists, carpenters, millwrights, sheet metal workers, blacksmiths, plumbers, bricklayers and masons, structural ironworkers, pipe fitters, electricians, pattern makers, painters and decorators.

For educational purposes these workers, whether in the electrochemical plants, manufacturing establishments or the building trades, can be dealt with together.

Vocational Schools

There are two educational approaches to the problem presented by such workers. One is the preemployment courses for boys from 14 to 16 years of age in special vocational schools which devote a large amount of time to mechanical work and to supplementary drawing, mathematics and principles of physics. The question of the organization of a school of this type in a community of the size of Niagara Falls is one not easily answered. Such schools are unquestionably expensive to maintain, although aided materially by state and federal agents, and it should be understood that they succeed in holding but a fraction of the boys who reach the age of 14 and who will later go into mechanical trades.

Buffalo, with a population of 500,000, maintains four such schools with a registry last year of over 600 pupils with very satisfactory results. Elmira, a city of about the same size as Niagara Falls, has maintained a school of this type for 6 or 7 years. Last year it had 110 pupils and some ten instructors and offers courses in machine work, electrical work, plumbing and steam fitting, carpentry and cabinetmaking. The salaries paid last year amounted to $15,900, of which $9450 was met by state and federal aid, leaving a net salary expense of $6450.

In Niagara Falls, such a school might be started on a moderate basis and allowed to develop as the city increases in population. Courses in machine work and in carpentry and millwrighting would

seem to be the two courses most needed and most calculated to bring results.

If an adequate machine shop is to be available in the high school building, a course in machine work could be organized without large outlay for equipment. Cordial support for such courses would seem to be assured on the part of employers and officials of organized labor, judging from interviews held during the survey. If such a school or classes are started the courses should include shop training, directly related technical instruction, instruction desirable for citizenship and the elements of general education.

It is recommended that the organization of the courses of instruction be made on a basis that will require two years for completion. The courses for the two years, however, should be organized, just as far as possible, as units complete in themselves, so that boys may pass out at the end of the first year with a definite gain in vocational equipment. The length of the school day in such classes should be as near as possible to that of the usual industrial day and it is recommended that this be made seven hours and that the school training be continued for practically the entire calendar year.

It is recommended that the number of pupils assigned to one instructor of shop work shall not exceed 16. Teachers of shop work in these classes should have a background of considerable practical experience in the trades to be taught.

It should be noted that in regard to this type of vocational education that state and federal aid is available for two-thirds the salary of teachers giving instruction in industrial and related technical classes.

Evening Classes

The main educational provisions for workers in the above groups, however, must be found in evening classes and it is to be hoped later on, for those below 18 years of age, in part-time classes. Experience has indicated that the following courses are serviceable and practicable for this purpose:

Draftsmen. Mechanical drawing covering the making of working drawings, projection, intersections and developments, free-hand sketching for machine parts, detail and assembly drawings for the first two years, and mechanism and simple structural drawing for the third year.

Strength of materials. The plan of instruction should be very simple and deal mainly with the stresses and strains produced under tension, compression and shearing. Columns and beams must neces-

sarily be dealt with from the empirical standpoint without the theoretical mathematical analysis.

Machinists. Mechanical drawing, much the same as for draftsmen, concentrated in the second year upon drawings illustrating machine construction.

Shop mathematics, fractions and decimal parts, metric system calculations relating to mensuration, pulleys, belting, gearing, screw threads and taper turning.

Machine shop practice. If a school machine shop is available with an equipment of typical up-to-date machine tools, a course in practical shop work can be given with much profit that will serve to broaden the experience of the machine tenders, helpers and hands by affording practice on the various tools. Such a course can be differentiated according to the needs of the individuals, some men wanting special work on particular tools such as the lathe, planer, shaper or milling machine.

Sheet Metal Workers. Mechanical drawing, same as for draftsmen for first year, running into intersections and developments and pattern work in the second year.

Pattern Makers. Mechanical drawing, same as for draftsmen first two years; shop mathematics, same as for machinists.

Structural Iron Workers. Courses in blue print reading. Course in strength of materials might attract a number of these workers.

Carpenters. Elements of architectural drawing. First year: course to include working drawings dealing with full-size and scale details of frame, brick and stone work construction; elevations and sections of windows, doors etc., from blackboard instruction; second year: mechanics details. Sections and developments as prepared for the shop. Details of platform and stairway construction.

Plan reading and cost estimating. Course to cover the methods of estimating of materials with reference to the provisions of the building code of the city.

Millwrights. Architectural drawing, same as for carpenters. Shop mathematics, same as for machinists, with special reference to millwright calculations.

Bricklayers and Masons. Architectural drawing, same as for carpenters.

Plumbers. Free-hand sketching and blue print reading, dealing with pipe lines and fixtures, giving figures, dimensions and notes as related to installation and calculations needed for material. If apprenticeship rules do not allow of the apprentice handling tools, a course in practical work will be in demand. Accompanying this

course should be instruction in the physical principles underlying the use of fixtures, traps and hot water boilers illustrated by the rules of the board of health bearing upon the same.

Pipe Fitters. Free-hand sketching. Blue print reading, same as for plumbers.

Electricians. Course in elementary and applied electricity. The practical units of current, voltage and resistance; Ohm's law; measurement of current and voltage by means of ammeter and voltmeter; the measurement of resistance by means of ammeter and voltmeter, and by means of Wheatstone's bridge; the equivalent resistance of conductors in series and parallel circuits, and how the current and voltage divides in such circuits; the meaning and use of circular mil and mil foot.

Computations of resistance of wires from their dimensions and specific resistances; the practical units of power; measurements of power by means of ammeter and voltmeter and by wattmeter; the use of watt-hour meter; the calculation of total power in a circuit, the power lost in line, and the relation of power loss to diameter of conductor.

The current carrying capacities of conductors for different sizes and conditions; the theory and operation of the three wire system; the operation of switching apparatus, including fuses, circuit breakers, and remote control switching; methods of using wire tables and handbooks; the Electrical Code requirements.

For All Workers. Courses in physics, dealing with mechanics, heat and hydraulics. Courses in algebra and geometry are advised if sufficient numbers to justify classes can be enrolled.

No evening courses are recommended for blacksmiths or painters and decorators, in the first case because of the small number involved and the difficulty experienced in securing attendance of men from this trade. In the case of painters and decorators the difficulties and expense involved in developing practical courses and the small number that are attracted to such courses make such classes unsatisfactory to maintain.

The importance of selecting the best possible material for teachers in these classes can not be overemphasized. Only men with practical experience in the trade or subject taught should be employed. When the course involves instruction in science, the teacher should either have had practical experience in industry or have made a special study of the industries from which pupils are likely to come.

It should be noted in this connection that the State will pay two-thirds of the salary of the first teacher and one-half of the salary of other teachers in approved evening vocational classes.

It is recommended that these courses be given on three nights a week and that as far as practicable the classes be arranged on the trade unit basis noted above; also that the maximum number in practical shop classes be placed at 20 and in classes in drawing, shop mathematics and science at 24; also, that a nominal deposit be required in each course by all pupils registered and that this deposit shall be returned to those pupils who complete at least 75 per cent of all sessions of the classes of which they are members.

All evening courses should be thoroughly advertised by posters in the plants and in places where they will reach the eyes of the workers a considerable time before beginning. The courses in the day high school should be presented before the graduating classes of the grammar schools of the city and should be set forth by the principal of the high school to the pupils.

Supervision

Consideration should be given to the fact that vocational classes like those recommended can be efficiently maintained only when under adequate expert direction. If these classes are to be organized in the public schools provision should be made for a supervisor with salary sufficient to secure a capable man experienced in such work and if possible one who has also had some industrial experience. Such a supervisor should have the direction of all industrial work in day vocational classes, of the technical work in the high school and the evening vocational classes and any part-time classes that may be established.

Finally, it should be emphasized that vocational instruction in the public schools can be made successful and maintained at a high standard of efficiency only through the earnest and intimate cooperation of those engaged in practical work in the industries. The schoolmen need this cooperation in order that their instruction may make a real connection with the vocational needs of the workers and keep pace with the changing conditions of industry.

Advisory Committees

The most effective method to achieve this result so far developed is through the appointment by the board of education of advisory committees in each trade or vocation represented. In the trades where the workers employed are to a large extent organized, such

committees may well consist of two or three persons selected from employers associations, two or three from labor organizations and an additional member nominated by this group of four or six. In cases where the workers are not organized, a committee selected from persons nominated by the employers associations might serve the purpose.

Such committees should have direct relations with the supervisor of vocational education, who should be instructed before action is taken upon such matters to invite the recommendations of the committees as to the establishment of new industrial classes, the selection of equipment, the content and length of courses of study, the requirements for graduation and certification, the number of pupils admitted to classes.

When important questions of policy relating to work in industrial education are concerned it is highly desirable that the board of education obtain the advice of these committees directly.

The value of all such courses as above indicated, indeed, of all the propositions recommended in this report, come back largely to the question of dollars and cents expended in relation to the results obtained. In a community of the size of Niagara Falls the worth of such provisions can be fully determined only after two or three years of serious trial.

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